July 12, 2016

United States Environmental Protection Agency ("USEPA") Region 1
Water Technical Unit (SMR-04)
5 Post Office Square, Suite 100
Boston, Massachusetts 02109-3912

Re: ***Initial Whole Effluent Toxicity ("WET") Testing***
Veolia Energy North America
Kendall Green Energy LLC
265 First Street
Cambridge, MA 02142
NPDES Permit No. MA0004898

To Whom It May Concern:

AMEC Massachusetts, Inc. ("AMEC"), on behalf of Kendall Green Energy LLC ("Kendall"), is providing this notification of WET testing as required in the facility's National Pollutant Discharge Elimination System ("NPDES") permit Effective on February 1, 2011.

Per the requirements of Part I.A. Effluent Limitations and Monitoring Requirements of Kendall's NPDES Permit, WET testing results were as follows:

Acute Toxicity Evaluation

Species	**LC-50 48 Hours**
C. dubia	>100%
P. promelas	>100%

Chronic Toxicity Evaluation

Species	**C-NOEC**
C. dubia	25%
P. promelas	100%

These tests followed the requirements of Attachment C1 for freshwater species due to the salinity of the intake water being less than one part per trillion.

LC_{50} is the concentration of a sample that causes mortality of 50% of the test population at a specific time of observation. So, if the LC_{50} is >100% effluent, less than 50% of the organisms may die from undiluted discharge from the facility. Therefore, an LC_{50} of >100% is the best result achievable for this parameter.

Chronic (Long-term Exposure Test) – No Observed Effect Concentration ("C-NOEC") is the

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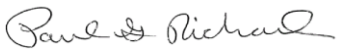
highest tested concentration of an effluent or a toxicant at which no adverse effects are observed on the aquatic test organisms at a specified time of observation. So, if the C-NOEC is >100%, no effects from long term exposure were observed from undiluted discharge from the facility. This is the best result achievable for this parameter. The C-NOEC of 25% shows that some of the organisms **may** have been affected at a 25% concentration of facility discharge. The 25% C-NOEC result is not optimum, but the other results are also taken into consideration when reviewing as a whole. Note - there were some anomalies in this portion of the analysis that may have resulted in the lower C-NOEC. The following anomalies were identified by the testing laboratory:

- C. dubia disappeared in two of the sample replicates
- P. Promelas was inadvertently killed
- C. dubia had a non-standard percent survival of 0% at 100% test concentration

In AMEC's opinion; the facility is in compliance with pollutants that have permit limits; the LC_{50} of >100% indicates that less than 50% of organisms died from undiluted discharge; the C-NOEC at >100% shows no effect from undiluted discharge; and the C-NOEC at 25% shows there may have been some impact on the organism, but this may have been effected by anomalies in the testing. Therefore, these results appear to be favorable and should be considered a pass by USEPA. Also, results from Q3, 2015 (100%), Q4 2015 (100%) and Q1 2016 (50%) C. dubia C-NOEC show that the chronic effect of effluent water is limited.

Please feel free to contact me if you have any questions or require any additional information. Thank you for your consideration.

Sincerely,
AMEC Massachusetts, Inc.
By,



Paul G. Richard
Senior Program Director
Phone: 978-392-5328
paul.richard@amecfw.com

Enclosures: ESS Laboratory Work Order #: 1606174

Cc: Sean Caldwell, Veolia
Jim Harrison, Veolia
David Lachance, AMEC

CERTIFICATE OF ANALYSIS

James Harrison
Veolia
265 First Street
Cambridge, MA 02142

RE: NPDES Bioassay (N/A)
ESS Laboratory Work Order Number: 1606174

This signed Certificate of Analysis is our approved release of your analytical results. These results are only representative of sample aliquots received at the laboratory. ESS Laboratory expects its clients to follow all regulatory sampling guidelines. Beginning with this page, the entire report has been paginated. This report should not be copied except in full without the approval of the laboratory. Samples will be disposed of thirty days after the final report has been delivered. If you have any questions or concerns, please feel free to call our Customer Service Department.

Laurel Stoddard
Laboratory Director

REVIEWED
By ESS Laboratory at 1:05 pm, Jul 11, 2016

Analytical Summary
The project as described above has been analyzed in accordance with the ESS Quality Assurance Plan. This plan utilizes the following methodologies: US EPA SW-846, US EPA Methods for Chemical Analysis of Water and Wastes per 40 CFR Part 136, APHA Standard Methods for the Examination of Water and Wastewater, American Society for Testing and Materials (ASTM), and other recognized methodologies. The analyses with these noted observations are in conformance to the Quality Assurance Plan. In chromatographic analysis, manual integration is frequently used instead of automated integration because it produces more accurate results.

The test results present in this report are in compliance with NELAC Standards, A2LA and/or client Quality Assurance Project Plans (QAPP). The laboratory has reviewed the following: Sample Preservations, Hold Times, Initial Calibrations, Continuing Calibrations, Method Blanks, Blank Spikes, Blank Spike Duplicates, Duplicates, Matrix Spikes, Matrix Spike Duplicates, Surrogates and Internal Standards. Any results which were found to be outside of the recommended ranges stated in our SOPs will be noted in the Project Narrative.

Subcontracted Analyses
New England Bioassay - Manchester, CT Bioassay

CERTIFICATE OF ANALYSIS

Client Name: Veolia
Client Project ID: NPDES Bioassay

ESS Laboratory Work Order: 1606174

SAMPLE RECEIPT

The following samples were received on June 10, 2016 for the analyses specified on the enclosed Chain of Custody Record.

The sampling for this project was performed by a representative of ESS Laboratory.

The samples and analyses listed below were analyzed in accordance with the Guidelines Establishing Test Procedures for the Analysis of Pollutants, 40 CFR Part 136, as amended.

Samples 1606174-01 and 1606174-02 were received on June 7, 2016.
Samples 1606174-03 and 1606174-04 were received on June 8, 2016.

Lab Number	Sample Name	Matrix	Analysis
1606174-01	Final Effluent	Waste Water	120.1, 200.7, 2320B, 2540B, 2540D, 350.1, 5310B, Field, n/a
1606174-02	Receiving Water	Surface Water	120.1, 200.7, 2320B, 2540B, 2540D, 350.1, 5310B, Field
1606174-03	Final Effluent	Waste Water	120.1, 200.7, 2320B, 2540B, 2540D, 350.1, 5310B, Field
1606174-04	Receiving Water	Surface Water	120.1, 200.7, 2320B, 2540B, 2540D, 350.1, 5310B, Field
1606174-05	Final Effluent	Waste Water	120.1, 200.7, 2320B, 2540B, 2540D, 350.1, 5310B, Field
1606174-06	Receiving Water	Surface Water	120.1, 200.7, 2320B, 2540B, 2540D, 350.1, 5310B, Field

CERTIFICATE OF ANALYSIS

Client Name: Veolia
Client Project ID: NPDES Bioassay

ESS Laboratory Work Order: 1606174

PROJECT NARRATIVE

No unusual observations noted.

End of Project Narrative.

DATA USABILITY LINKS

Definitions of Quality Control Parameters

Semivolatile Organics Internal Standard Information

Semivolatile Organics Surrogate Information

Volatile Organics Internal Standard Information

Volatile Organics Surrogate Information

EPH and VPH Alkane Lists

CERTIFICATE OF ANALYSIS

Client Name: Veolia
Client Project ID: NPDES Bioassay

ESS Laboratory Work Order: 1606174

CURRENT SW-846 METHODOLOGY VERSIONS

Analytical Methods

1010A - Flashpoint
6010C - ICP
6020A - ICP MS
7010 - Graphite Furnace
7196A - Hexavalent Chromium
7470A - Aqueous Mercury
7471B - Solid Mercury
8011 - EDB/DBCP/TCP
8015D - GRO/DRO
8081B - Pesticides
8082A - PCB
8100M - TPH
8151A - Herbicides
8260B - VOA
8270D - SVOA
8270D SIM - SVOA Low Level
9014 - Cyanide
9038 - Sulfate
9040C - Aqueous pH
9045D - Solid pH (Corrosivity)
9050A - Specific Conductance
9056A - Anions (IC)
9060A - TOC
9095B - Paint Filter
MADEP 04-1.1 - EPH / VPH

Prep Methods

3005A - Aqueous ICP Digestion
3020A - Aqueous Graphite Furnace / ICP MS Digestion
3050B - Solid ICP / Graphite Furnace / ICP MS Digestion
3060A - Solid Hexavalent Chromium Digestion
3510C - Separatory Funnel Extraction
3520C - Liquid / Liquid Extraction
3540C - Manual Soxhlet Extraction
3541 - Automated Soxhlet Extraction
3546 - Microwave Extraction
3580A - Waste Dilution
5030B - Aqueous Purge and Trap
5030C - Aqueous Purge and Trap
5035 - Solid Purge and Trap

SW846 Reactivity Methods 7.3.3.2 (Reactive Cyanide) and 7.3.4.1 (Reactive Sulfide) have been withdrawn by EPA. These methods are reported per client request and are not NELAP accredited.

CERTIFICATE OF ANALYSIS

Client Name: Veolia
Client Project ID: NPDES Bioassay

ESS Laboratory Work Order: 1606174

Total Metals

Client Sample ID: Final Effluent
Date Sampled: 06/07/16 12:00
Percent Solids: N/A

ESS Laboratory Sample ID: 1606174-01
Sample Matrix: Waste Water

All methods used are in accordance with 40 CFR 136.

Analyte	Results	Units	MRL	MA Permit L	Method	DF	Analyst	Analyzed	I/V	F/V
Aluminum	**0.024**	mg/L	0.010	0.02	200.7	1	KJK	06/10/16 12:48	100	10
Cadmium	ND	mg/L	0.0010	0.001	200.7	1	KJK	06/10/16 12:48	100	10
Calcium	**17.0**	mg/L	0.020	0.05	200.7	1	KJK	06/10/16 12:48	100	10
Chromium	ND	mg/L	0.002	0.005	200.7	1	KJK	06/10/16 12:48	100	10
Copper	**0.071**	mg/L	0.002	0.0025	200.7	1	KJK	06/10/16 12:48	100	10
Hardness	**76.9**	mg/L	0.132		200.7	1	KJK	06/10/16 12:48	1	1
Lead	**0.004**	mg/L	0.002	0.005	200.7	1	KJK	06/10/16 12:48	100	10
Magnesium	**8.38**	mg/L	0.020	0.05	200.7	1	KJK	06/10/16 12:48	100	10
Nickel	ND	mg/L	0.002	0.004	200.7	1	KJK	06/10/16 12:48	100	10
Zinc	**0.019**	mg/L	0.005	0.0025	200.7	1	KJK	06/10/16 12:48	100	10

Client Sample ID: Receiving Water
Date Sampled: 06/06/16 11:30
Percent Solids: N/A

ESS Laboratory Sample ID: 1606174-02
Sample Matrix: Surface Water

All methods used are in accordance with 40 CFR 136.

Analyte	Results	Units	MRL	MA Permit L	Method	DF	Analyst	Analyzed	I/V	F/V
Aluminum	**0.103**	mg/L	0.010	0.02	200.7	1	KJK	06/09/16 23:38	100	10
Cadmium	ND	mg/L	0.0010	0.001	200.7	1	KJK	06/09/16 23:38	100	10
Calcium	**30.6**	mg/L	0.020	0.05	200.7	1	KJK	06/09/16 23:38	100	10
Chromium	ND	mg/L	0.002	0.005	200.7	1	KJK	06/09/16 23:38	100	10
Copper	**0.009**	mg/L	0.002	0.0025	200.7	1	KJK	06/09/16 23:38	100	10
Hardness	**131**	mg/L	0.132		200.7	1	KJK	06/09/16 23:38	1	1
Lead	ND	mg/L	0.002	0.005	200.7	1	KJK	06/10/16 12:57	100	10
Magnesium	**13.4**	mg/L	0.020	0.05	200.7	1	KJK	06/09/16 23:38	100	10
Nickel	**0.003**	mg/L	0.002	0.004	200.7	1	KJK	06/09/16 23:38	100	10
Zinc	**0.042**	mg/L	0.005	0.0025	200.7	1	KJK	06/09/16 23:38	100	10

Client Sample ID: Final Effluent
Date Sampled: 06/08/16 12:00
Percent Solids: N/A

ESS Laboratory Sample ID: 1606174-03
Sample Matrix: Waste Water

All methods used are in accordance with 40 CFR 136.

Analyte	Results	Units	MRL	MA Permit L	Method	DF	Analyst	Analyzed	I/V	F/V
Aluminum	**0.014**	mg/L	0.010	0.02	200.7	1	KJK	06/10/16 12:52	100	10
Cadmium	ND	mg/L	0.0010	0.001	200.7	1	KJK	06/10/16 12:52	100	10
Calcium	**14.5**	mg/L	0.020	0.05	200.7	1	KJK	06/10/16 12:52	100	10

CERTIFICATE OF ANALYSIS

Client Name: Veolia
Client Project ID: NPDES Bioassay

ESS Laboratory Work Order: 1606174

Total Metals

Chromium	ND	mg/L	0.002	0.005	200.7	1	KJK	06/10/16 12:52	100	10
Copper	**0.060**	mg/L	0.002	0.0025	200.7	1	KJK	06/10/16 12:52	100	10
Hardness	**67.6**	mg/L	0.132		200.7	1	KJK	06/10/16 12:52	1	1
Lead	ND	mg/L	0.002	0.005	200.7	1	KJK	06/10/16 12:52	100	10
Magnesium	**7.63**	mg/L	0.020	0.05	200.7	1	KJK	06/10/16 12:52	100	10
Nickel	ND	mg/L	0.002	0.004	200.7	1	KJK	06/10/16 12:52	100	10
Zinc	**0.010**	mg/L	0.005	0.0025	200.7	1	KJK	06/10/16 12:52	100	10

Client Sample ID: Receiving Water
Date Sampled: 06/08/16 12:45
Percent Solids: N/A

ESS Laboratory Sample ID: 1606174-04
Sample Matrix: Surface Water

All methods used are in accordance with 40 CFR 136.

Analyte	Results	Units	MRL	MA Permit L	Method	DF	Analyst	Analyzed	I/V	F/V
Aluminum	**0.028**	mg/L	0.010	0.02	200.7	1	KJK	06/09/16 23:44	100	10
Cadmium	ND	mg/L	0.0010	0.001	200.7	1	KJK	06/09/16 23:44	100	10
Calcium	**28.8**	mg/L	0.020	0.05	200.7	1	KJK	06/09/16 23:44	100	10
Chromium	ND	mg/L	0.002	0.005	200.7	1	KJK	06/09/16 23:44	100	10
Copper	**0.012**	mg/L	0.002	0.0025	200.7	1	KJK	06/09/16 23:44	100	10
Hardness	**131**	mg/L	0.132		200.7	1	KJK	06/09/16 23:44	1	1
Lead	ND	mg/L	0.002	0.005	200.7	1	KJK	06/09/16 23:44	100	10
Magnesium	**14.3**	mg/L	0.020	0.05	200.7	1	KJK	06/09/16 23:44	100	10
Nickel	ND	mg/L	0.002	0.004	200.7	1	KJK	06/09/16 23:44	100	10
Zinc	**0.039**	mg/L	0.005	0.0025	200.7	1	KJK	06/09/16 23:44	100	10

Client Sample ID: Final Effluent
Date Sampled: 06/10/16 07:00
Percent Solids: N/A

ESS Laboratory Sample ID: 1606174-05
Sample Matrix: Waste Water

All methods used are in accordance with 40 CFR 136.

Analyte	Results	Units	MRL	MA Permit L	Method	DF	Analyst	Analyzed	I/V	F/V
Aluminum	**0.020**	mg/L	0.010	0.02	200.7	1	ICP	06/13/16 19:54	100	10
Cadmium	ND	mg/L	0.0010	0.001	200.7	1	ICP	06/13/16 19:54	100	10
Calcium	**28.8**	mg/L	0.020	0.05	200.7	1	ICP	06/13/16 19:54	100	10
Chromium	ND	mg/L	0.002	0.005	200.7	1	ICP	06/13/16 19:54	100	10
Copper	**0.057**	mg/L	0.002	0.0025	200.7	1	ICP	06/13/16 19:54	100	10
Hardness	**141**	mg/L	0.132		200.7	1	ICP	06/13/16 19:54	1	1
Lead	**0.003**	mg/L	0.002	0.005	200.7	1	ICP	06/13/16 19:54	100	10
Magnesium	**16.8**	mg/L	0.020	0.05	200.7	1	ICP	06/13/16 19:54	100	10
Nickel	ND	mg/L	0.002	0.004	200.7	1	ICP	06/13/16 19:54	100	10
Zinc	**0.019**	mg/L	0.005	0.0025	200.7	1	ICP	06/13/16 19:54	100	10

CERTIFICATE OF ANALYSIS

Client Name: Veolia
Client Project ID: NPDES Bioassay

ESS Laboratory Work Order: 1606174

Total Metals

Client Sample ID: Receiving Water
Date Sampled: 06/10/16 11:00
Percent Solids: N/A

ESS Laboratory Sample ID: 1606174-06
Sample Matrix: Surface Water

All methods used are in accordance with 40 CFR 136.

Analyte	Results	Units	MRL	MA Permit L	Method	DF	Analyst	Analyzed	I/V	F/V
Aluminum	**0.025**	mg/L	0.010	0.02	200.7	1	ICP	06/13/16 19:58	100	10
Cadmium	ND	mg/L	0.0010	0.001	200.7	1	ICP	06/13/16 19:58	100	10
Calcium	**29.0**	mg/L	0.020	0.05	200.7	1	ICP	06/13/16 19:58	100	10
Chromium	ND	mg/L	0.002	0.005	200.7	1	ICP	06/13/16 19:58	100	10
Copper	**0.006**	mg/L	0.002	0.0025	200.7	1	ICP	06/13/16 19:58	100	10
Hardness	**143**	mg/L	0.132		200.7	1	ICP	06/13/16 19:58	1	1
Lead	ND	mg/L	0.002	0.005	200.7	1	ICP	06/13/16 19:58	100	10
Magnesium	**17.1**	mg/L	0.020	0.05	200.7	1	ICP	06/13/16 19:58	100	10
Nickel	ND	mg/L	0.002	0.004	200.7	1	ICP	06/13/16 19:58	100	10
Zinc	**0.038**	mg/L	0.005	0.0025	200.7	1	ICP	06/13/16 19:58	100	10

Classical Chemistry

Client Sample ID: Final Effluent
Date Sampled: 06/07/16 12:00
Percent Solids: N/A

ESS Laboratory Sample ID: 1606174-01
Sample Matrix: Waste Water

All methods used are in accordance with 40 CFR 136.

Analyte	Results	Units	MRL	MA Permit L	Method	DF	Analyst	Analyzed
Alkalinity as CaCO3	**43**	mg/L	2	2	2320B	1	JLK	06/14/16 18:10
Ammonia as N	**0.19**	mg/L	0.10	0.1	350.1	1	JLK	06/15/16 22:53
Bioassay	**See Attached**							
Conductivity	**1230**	umhos/cm	5		120.1	1	MJV	06/09/16 17:38
Field Dissolved Oxygen	**8.34**	mg/L	N/A	1	Field	1	MNM	06/07/16 12:00
Field pH	**7.74**	S.U.	N/A		Field	1	MNM	06/07/16 12:00
Field Temperature	**27.4**	°C	N/A		Field	1	MNM	06/07/16 12:00
Salinity	**0.600**	S.U.	N/A		Field	1	MNM	06/07/16 12:00
Total Organic Carbon (Average)	**4.3**	mg/L	0.5		5310B	1	DEL	06/14/16 0:08
Total Residual Chlorine	**0.08**	mg/L	N/A	0.05	Field	1	MNM	06/07/16 12:00
Total Solids	**560**	mg/L	50		2540B	1	EEM	06/10/16 15:40
Total Suspended Solids	ND	mg/L	5		2540D	1	EEM	06/09/16 15:55

CERTIFICATE OF ANALYSIS

Client Name: Veolia
Client Project ID: NPDES Bioassay

ESS Laboratory Work Order: 1606174

Classical Chemistry

Client Sample ID: Receiving Water
Date Sampled: 06/06/16 11:30
Percent Solids: N/A

ESS Laboratory Sample ID: 1606174-02
Sample Matrix: Surface Water

All methods used are in accordance with 40 CFR 136.

Analyte	Results	Units	MRL	MA Permit L	Method	DF	Analyst	Analyzed
Alkalinity as CaCO3	**39**	mg/L	2	2	2320B	1	JLK	06/14/16 18:10
Ammonia as N	**0.32**	mg/L	0.10	0.1	350.1	1	JLK	06/15/16 22:54
Conductivity	**1130**	umhos/cm	5		120.1	1	MJV	06/09/16 17:38
Field Dissolved Oxygen	**7.60**	mg/L	N/A	1	Field	1	MNM	06/06/16 11:30
Field pH	**7.68**	S.U.	N/A		Field	1	MNM	06/06/16 11:30
Field Temperature	**22.2**	°C	N/A		Field	1	MNM	06/06/16 11:30
Salinity	**0.500**	S.U.	N/A		Field	1	MNM	06/06/16 11:30
Total Organic Carbon (Average)	**46.0**	mg/L	5.0		5310B	10	DEL	06/14/16 0:21
Total Residual Chlorine	**0.20**	mg/L	N/A	0.05	Field	1	MNM	06/06/16 11:30
Total Solids	**650**	mg/L	50		2540B	1	EEM	06/10/16 15:40
Total Suspended Solids	**28**	mg/L	5		2540D	1	EEM	06/09/16 15:55

Client Sample ID: Final Effluent
Date Sampled: 06/08/16 12:00
Percent Solids: N/A

ESS Laboratory Sample ID: 1606174-03
Sample Matrix: Waste Water

All methods used are in accordance with 40 CFR 136.

Analyte	Results	Units	MRL	MA Permit L	Method	DF	Analyst	Analyzed
Alkalinity as CaCO3	**46**	mg/L	10	2	2320B	1	JLK	06/14/16 18:10
Ammonia as N	**0.16**	mg/L	0.10	0.1	350.1	1	JLK	06/15/16 22:55
Conductivity	**1250**	umhos/cm	5		120.1	1	MJV	06/09/16 17:38
Field Dissolved Oxygen	**7.88**	mg/L	N/A	1	Field	1	MNM	06/08/16 12:00
Field pH	**7.67**	S.U.	N/A		Field	1	MNM	06/08/16 12:00
Field Temperature	**26.0**	°C	N/A		Field	1	MNM	06/08/16 12:00
Salinity	**0.600**	S.U.	N/A		Field	1	MNM	06/08/16 12:00
Total Organic Carbon (Average)	**4.3**	mg/L	0.5		5310B	1	DEL	06/14/16 0:58
Total Residual Chlorine	**0.09**	mg/L	N/A	0.05	Field	1	MNM	06/08/16 12:00
Total Solids	**400**	mg/L	50		2540B	1	EEM	06/10/16 15:40
Total Suspended Solids	**5**	mg/L	5		2540D	1	JLK	06/14/16 21:07

Client Sample ID: Receiving Water
Date Sampled: 06/08/16 12:45
Percent Solids: N/A

ESS Laboratory Sample ID: 1606174-04
Sample Matrix: Surface Water

All methods used are in accordance with 40 CFR 136.

Analyte	Results	Units	MRL	MA Permit L	Method	DF	Analyst	Analyzed
Alkalinity as CaCO3	**40**	mg/L	10	2	2320B	1	JLK	06/14/16 18:10

CERTIFICATE OF ANALYSIS

Client Name: Veolia
Client Project ID: NPDES Bioassay

ESS Laboratory Work Order: 1606174

Classical Chemistry

Ammonia as N	**0.30**	mg/L	0.10	0.1	350.1	1	JLK	06/15/16 22:55
Conductivity	**1200**	umhos/cm	5		120.1	1	MJV	06/09/16 17:38
Field Dissolved Oxygen	**6.11**	mg/L	N/A	1	Field	1	MNM	06/08/16 12:45
Field pH	**7.78**	S.U.	N/A		Field	1	MNM	06/08/16 12:45
Field Temperature	**23.0**	°C	N/A		Field	1	MNM	06/08/16 12:45
Salinity	**0.600**	S.U.	N/A		Field	1	MNM	06/08/16 12:45
Total Organic Carbon (Average)	**5.6**	mg/L	0.5		5310B	1	DEL	06/14/16 1:11
Total Residual Chlorine	**0.17**	mg/L	N/A	0.05	Field	1	MNM	06/08/16 12:45
Total Solids	**680**	mg/L	50		2540B	1	EEM	06/10/16 15:40
Total Suspended Solids	**5**	mg/L	5		2540D	1	JLK	06/14/16 21:07

Client Sample ID: Final Effluent
Date Sampled: 06/10/16 07:00
Percent Solids: N/A

ESS Laboratory Sample ID: 1606174-05
Sample Matrix: Waste Water

All methods used are in accordance with 40 CFR 136.

Analyte	Results	Units	MRL	MA Permit L	Method	DF	Analyst	Analyzed
Alkalinity as CaCO3	**43**	mg/L	10	2	2320B	1	JLK	06/14/16 18:10
Ammonia as N	**0.21**	mg/L	0.10	0.1	350.1	1	JLK	06/15/16 22:58
Conductivity	**1460**	umhos/cm	5		120.1	1	JLK	06/14/16 16:50
Field Dissolved Oxygen	**6.99**	mg/L	N/A	1	Field	1	MNM	06/10/16 7:00
Field pH	**7.67**	S.U.	N/A		Field	1	MNM	06/10/16 7:00
Field Temperature	**23.7**	°C	N/A		Field	1	MNM	06/10/16 7:00
Salinity	**0.700**	S.U.	N/A		Field	1	MNM	06/10/16 7:00
Total Organic Carbon (Average)	**5.0**	mg/L	0.5		5310B	1	DEL	06/14/16 1:23
Total Residual Chlorine	**0.07**	mg/L	N/A	0.05	Field	1	MNM	06/10/16 7:00
Total Solids	**744**	mg/L	10		2540B	1	JLK	06/14/16 21:12
Total Suspended Solids	ND	mg/L	5		2540D	1	JLK	06/14/16 21:07

Client Sample ID: Receiving Water
Date Sampled: 06/10/16 11:00
Percent Solids: N/A

ESS Laboratory Sample ID: 1606174-06
Sample Matrix: Surface Water

All methods used are in accordance with 40 CFR 136.

Analyte	Results	Units	MRL	MA Permit L	Method	DF	Analyst	Analyzed
Alkalinity as CaCO3	**46**	mg/L	10	2	2320B	1	JLK	06/14/16 18:10
Ammonia as N	**0.28**	mg/L	0.10	0.1	350.1	1	JLK	06/15/16 22:59
Conductivity	**1430**	umhos/cm	5		120.1	1	JLK	06/14/16 16:50
Field Dissolved Oxygen	**6.31**	mg/L	N/A	1	Field	1	MNM	06/10/16 11:00
Field pH	**7.52**	S.U.	N/A		Field	1	MNM	06/10/16 11:00
Field Temperature	**21.2**	°C	N/A		Field	1	MNM	06/10/16 11:00
Salinity	**0.700**	S.U.	N/A		Field	1	MNM	06/10/16 11:00

CERTIFICATE OF ANALYSIS

Client Name: Veolia
Client Project ID: NPDES Bioassay

ESS Laboratory Work Order: 1606174

Classical Chemistry

Total Organic Carbon (Average)	**6.0**	mg/L	0.5		5310B	1	DEL	06/14/16 1:35
Total Residual Chlorine	**0.11**	mg/L	N/A	0.05	Field	1	MNM	06/10/16 11:00
Total Solids	**476**	mg/L	10		2540B	1	JLK	06/14/16 21:12
Total Suspended Solids	ND	mg/L	5		2540D	1	JLK	06/14/16 21:07

CERTIFICATE OF ANALYSIS

Client Name: Veolia
Client Project ID: NPDES Bioassay

ESS Laboratory Work Order: 1606174

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Total Metals										
Batch CF60909 - 3005A										
Blank										
Cadmium	ND	0.0100	mg/L							
Chromium	ND	0.020	mg/L							
Copper	ND	0.020	mg/L							
Lead	ND	0.020	mg/L							
Nickel	ND	0.050	mg/L							
Zinc	ND	0.050	mg/L							
Blank										
Aluminum	ND	0.010	mg/L							
Cadmium	ND	0.0010	mg/L							
Calcium	ND	0.020	mg/L							
Calcium	ND	0.020	mg/L							
Chromium	ND	0.002	mg/L							
Copper	ND	0.002	mg/L							
Hardness	ND	0.132	mg/L							
Lead	ND	0.002	mg/L							
Magnesium	ND	0.020	mg/L							
Magnesium	ND	0.020	mg/L							
Nickel	ND	0.002	mg/L							
Zinc	ND	0.005	mg/L							
LCS										
Cadmium	0.228	0.0100	mg/L	0.2500		91	85-115			
Chromium	0.500	0.020	mg/L	0.5000		100	85-115			
Copper	0.505	0.020	mg/L	0.5000		101	85-115			
Lead	0.501	0.020	mg/L	0.5000		100	85-115			
Nickel	0.506	0.050	mg/L	0.5000		101	85-115			
Zinc	0.492	0.050	mg/L	0.5000		98	85-115			
LCS										
Aluminum	0.234	0.010	mg/L	0.2500		93	85-115			
Cadmium	0.0214	0.0010	mg/L	0.02500		86	85-115			
Calcium	0.459	0.020	mg/L	0.5000		92	85-115			
Calcium	0.459	0.020	mg/L	0.5000		92	85-115			
Chromium	0.048	0.002	mg/L	0.05000		95	85-115			
Copper	0.047	0.002	mg/L	0.05000		95	85-115			
Hardness	3.01	0.132	mg/L							
Lead	0.048	0.002	mg/L	0.05000		96	85-115			
Magnesium	0.452	0.020	mg/L	0.5000		90	85-115			
Magnesium	0.452	0.020	mg/L	0.5000		90	85-115			
Nickel	0.048	0.005	mg/L	0.05000		96	85-115			
Zinc	0.050	0.005	mg/L	0.05000		99	85-115			
LCS Dup										
Cadmium	0.229	0.0100	mg/L	0.2500		92	85-115	0.5	20	
Chromium	0.502	0.020	mg/L	0.5000		100	85-115	0.5	20	
Copper	0.509	0.020	mg/L	0.5000		102	85-115	0.7	20	

CERTIFICATE OF ANALYSIS

Client Name: Veolia
Client Project ID: NPDES Bioassay

ESS Laboratory Work Order: 1606174

Quality Control Data

Total Metals

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Batch CF60909 - 3005A										
Lead	0.503	0.020	mg/L	0.5000		101	85-115	0.3	20	
Nickel	0.509	0.050	mg/L	0.5000		102	85-115	0.7	20	
Zinc	0.498	0.050	mg/L	0.5000		100	85-115	1	20	
LCS Dup										
Aluminum	0.240	0.010	mg/L	0.2500		96	85-115	3	20	
Cadmium	0.0218	0.0010	mg/L	0.02500		87	85-115	2	20	
Calcium	0.493	0.020	mg/L	0.5000		99	85-115	7	20	
Calcium	0.493	0.020	mg/L	0.5000		99	85-115	7	20	
Chromium	0.049	0.002	mg/L	0.05000		97	85-115	2	20	
Copper	0.049	0.002	mg/L	0.05000		98	85-115	4	20	
Hardness	3.13	0.132	mg/L							
Lead	0.049	0.002	mg/L	0.05000		98	85-115	2	20	
Magnesium	0.460	0.020	mg/L	0.5000		92	85-115	2	20	
Magnesium	0.460	0.020	mg/L	0.5000		92	85-115	2	20	
Nickel	0.050	0.005	mg/L	0.05000		99	85-115	3	20	
Zinc	0.050	0.005	mg/L	0.05000		101	85-115	2	20	
Batch CF61310 - 3005A										
Blank										
Aluminum	ND	0.100	mg/L							
Copper	ND	0.020	mg/L							
Zinc	ND	0.050	mg/L							
Blank										
Aluminum	ND	0.010	mg/L							
Cadmium	ND	0.0010	mg/L							
Calcium	ND	0.020	mg/L							
Calcium	ND	0.020	mg/L							
Chromium	ND	0.002	mg/L							
Copper	ND	0.002	mg/L							
Hardness	ND	0.132	mg/L							
Lead	ND	0.002	mg/L							
Magnesium	ND	0.020	mg/L							
Magnesium	ND	0.020	mg/L							
Nickel	ND	0.005	mg/L							
Zinc	ND	0.005	mg/L							
LCS										
Aluminum	2.52	0.100	mg/L	2.500		101	85-115			
Copper	0.498	0.020	mg/L	0.5000		100	85-115			
Zinc	0.485	0.050	mg/L	0.5000		97	85-115			
LCS										
Aluminum	0.262	0.010	mg/L	0.2500		105	85-115			
Cadmium	0.0246	0.0010	mg/L	0.02500		98	85-115			
Calcium	0.546	0.020	mg/L	0.5000		109	85-115			
Calcium	0.546	0.020	mg/L	0.5000		109	85-115			
Chromium	0.052	0.002	mg/L	0.05000		103	85-115			

CERTIFICATE OF ANALYSIS

Client Name: Veolia
Client Project ID: NPDES Bioassay

ESS Laboratory Work Order: 1606174

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Total Metals										
Batch CF61310 - 3005A										
Copper	0.052	0.002	mg/L	0.05000		103	85-115			
Hardness	3.47	0.132	mg/L							
Lead	0.055	0.002	mg/L	0.05000		110	85-115			
Magnesium	0.511	0.020	mg/L	0.5000		102	85-115			
Magnesium	0.511	0.020	mg/L	0.5000		102	85-115			
Nickel	0.053	0.005	mg/L	0.05000		107	85-115			
Zinc	0.057	0.005	mg/L	0.05000		113	85-115			
LCS Dup										
Aluminum	2.43	0.100	mg/L	2.500		97	85-115	4	20	
Copper	0.480	0.020	mg/L	0.5000		96	85-115	4	20	
Zinc	0.475	0.050	mg/L	0.5000		95	85-115	2	20	
LCS Dup										
Aluminum	0.244	0.010	mg/L	0.2500		98	85-115	7	20	
Cadmium	0.0231	0.0010	mg/L	0.02500		93	85-115	6	20	
Calcium	0.498	0.020	mg/L	0.5000		100	85-115	9	20	
Calcium	0.498	0.020	mg/L	0.5000		100	85-115	9	20	
Chromium	0.049	0.002	mg/L	0.05000		97	85-115	6	20	
Copper	0.048	0.002	mg/L	0.05000		96	85-115	7	20	
Hardness	3.17	0.132	mg/L							
Lead	0.051	0.002	mg/L	0.05000		102	85-115	8	20	
Magnesium	0.467	0.020	mg/L	0.5000		93	85-115	9	20	
Magnesium	0.467	0.020	mg/L	0.5000		93	85-115	9	20	
Nickel	0.050	0.005	mg/L	0.05000		100	85-115	6	20	
Zinc	0.050	0.005	mg/L	0.05000		101	85-115	11	20	
Classical Chemistry										
Batch CF60923 - General Preparation										
Blank										
Total Suspended Solids	ND	5	mg/L							
LCS										
Total Suspended Solids	62		mg/L	60.60		102	80-120			
Batch CF60941 - General Preparation										
Blank										
Conductivity	ND	5	umhos/cm							
LCS										
Conductivity	1320		umhos/cm	1411		94	90-110			
Batch CF61022 - General Preparation										
Blank										
Total Solids	ND	10	mg/L							
LCS										
Total Solids	340		mg/L	324.0		105	80-120			
Batch CF61347 - General Preparation										

CERTIFICATE OF ANALYSIS

Client Name: Veolia
Client Project ID: NPDES Bioassay

ESS Laboratory Work Order: 1606174

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Classical Chemistry										
Batch CF61347 - General Preparation										
Blank										
Total Organic Carbon (1)	ND	0.5	mg/L							
Total Organic Carbon (2)	ND	0.5	mg/L							
Total Organic Carbon (Average)	ND	0.5	mg/L							
LCS										
Total Organic Carbon (1)	4.66	0.5	mg/L	5.000		93	80-120			
Total Organic Carbon (2)	4.86	0.5	mg/L	5.000		97	80-120			
Total Organic Carbon (Average)	4.80	0.5	mg/L							
LCS Dup										
Total Organic Carbon (1)	4.06	0.5	mg/L	5.000		81	80-120	14	200	
Total Organic Carbon (2)	4.04	0.5	mg/L	5.000		81	80-120	19	200	
Total Organic Carbon (Average)	4.00	0.5	mg/L							
Batch CF61426 - General Preparation										
Blank										
Total Solids	ND	10	mg/L							
LCS										
Total Solids	310		mg/L	324.0		96	80-120			
Batch CF61427 - General Preparation										
Blank										
Total Suspended Solids	ND	5	mg/L							
LCS										
Total Suspended Solids	60		mg/L	60.60		99	80-120			
Batch CF61428 - General Preparation										
Blank										
Conductivity	ND	5	umhos/cm							
LCS										
Conductivity	1320		umhos/cm	1411		94	90-110			
Batch CF61431 - General Preparation										
Blank										
Alkalinity as CaCO3	ND	10	mg/L							
LCS										
Alkalinity as CaCO3	78		mg/L	78.30		100	85-115			
Batch CF61501 - General Preparation										
Blank										
Ammonia as N	ND	0.10	mg/L							
LCS										
Ammonia as N	0.12	0.10	mg/L	0.09994		116	80-120			
LCS										
Ammonia as N	0.95	0.10	mg/L	0.9994		95	80-120			

CERTIFICATE OF ANALYSIS

Client Name: Veolia
Client Project ID: NPDES Bioassay

ESS Laboratory Work Order: 1606174

Notes and Definitions

Z-08	See Attached
U	Analyte included in the analysis, but not detected
D	Diluted.
ND	Analyte NOT DETECTED at or above the MRL (LOQ), LOD for DoD Reports, MDL for J-Flagged Analytes
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference
MDL	Method Detection Limit
MRL	Method Reporting Limit
LOD	Limit of Detection
LOQ	Limit of Quantitation
DL	Detection Limit
I/V	Initial Volume
F/V	Final Volume
§	Subcontracted analysis; see attached report
1	Range result excludes concentrations of surrogates and/or internal standards eluting in that range.
2	Range result excludes concentrations of target analytes eluting in that range.
3	Range result excludes the concentration of the C9-C10 aromatic range.
Avg	Results reported as a mathematical average.
NR	No Recovery
[CALC]	Calculated Analyte
SUB	Subcontracted analysis; see attached report

CERTIFICATE OF ANALYSIS

Client Name: Veolia
Client Project ID: NPDES Bioassay

ESS Laboratory Work Order: 1606174

ESS LABORATORY CERTIFICATIONS AND ACCREDITATIONS

ENVIRONMENTAL

Rhode Island Potable and Non Potable Water: LAI00179
http://www.health.ri.gov/find/labs/analytical/ESS.pdf

Connecticut Potable and Non Potable Water, Solid and Hazardous Waste: PH-0750
http://www.ct.gov/dph/lib/dph/environmental_health/environmental_laboratories/pdf/OutofStateCommercialLaboratories.pdf

Maine Potable and Non Potable Water, and Solid and Hazardous Waste: RI00002
http://www.maine.gov/dhhs/mecdc/environmental-health/water/dwp-services/labcert/documents/AllLabs.xls

Massachusetts Potable and Non Potable Water: M-RI002
http://public.dep.state.ma.us/Labcert/Labcert.aspx

New Hampshire (NELAP accredited) Potable and Non Potable Water, Solid and Hazardous Waste: 2424
http://des.nh.gov/organization/divisions/water/dwgb/nhelap/index.htm

New York (NELAP accredited) Non Potable Water, Solid and Hazardous Waste: 11313
http://www.wadsworth.org/labcert/elap/comm.html

New Jersey (NELAP accredited) Non Potable Water, Solid and Hazardous Waste: RI006
http://datamine2.state.nj.us/DEP_OPRA/OpraMain/pi_main?mode=pi_by_site&sort_order=PI_NAMEA&Select+a+Site:=58715

United States Department of Agriculture Soil Permit: P330-12-00139

Pennsylvania: 68-01752
http://www.depweb.state.pa.us/portal/server.pt/community/labs/13780/laboratory_accreditation_program/590095

ESI

EnviroSystems, Inc.
P.O. Box 778
Hampton, NH 03843-0778
603-926-3345

July 8, 2016

Mr. Joe Sirbak
ESS Laboratories
185 Frances Avenue
Cranston, Rhode Island 02910

Dear Mr. Sirbak:

Enclosed, please find a copy of our report evaluating the toxicity of effluent samples collected from the Kendall Green Energy Facility located in Cambridge, Massachusetts during June 2016. Acute and chronic toxicity was evaluated using the freshwater species, *Ceriodaphnia dubia* and *Pimephales promelas*.

Please do not hesitate to call me or Petra Karbe should you have any questions regarding the report.

Sincerely,

EnviroSystems, Incorporated

Kirk Cram
Toxicology Laboratory Manager

Enclosure
WET Test Report Certification
WET Test Report Number 27578-16-06
One (1) Copy (email only)

cc: Mr. Matt Miller (email only)
Ms. Michelle Mirenda (email only)
Mr. Shawn Morrell (email only)

WHOLE EFFLUENT TOXICITY TEST REPORT CERTIFICATION

Permittee Certification

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Executed on: 7/15/16

Authorized Signature

R. Scott McBurney

Print or Type Name

Kendall Green Energy, LLC

Print or Type the Permittee's Name

MA0004898

Type or Print the NPDES Permit No.

WHOLE EFFLUENT TOXICITY TEST REPORT CERTIFICATION (Bioassay Laboratory)

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Executed on: July 8, 2016

Kirk Cram
Toxicology Laboratory Manager - EnviroSystems, Inc.

METHODS USED IN NPDES PERMIT BIOMONITORING TESTING

Parameter	Method
Acute Exposure Bioassays:	
Ceriodaphnia dubia	EPA-821-R-02-012 2002.0
Daphnia pulex	EPA-821-R-02-012 2021.0
Pimephales promelas	EPA-821-R-02-012 2000.0
Americamysis bahia	EPA-821-R-02-012 2007.0
Menidia beryllina	EPA-821-R-02-012 2006.0
Cyprinodon variegatus	EPA-821-R-02-012 2004.0
Chronic Exposure Bioassays:	
Ceriodaphnia dubia	EPA-821-R-02-013 1002.0
Pimephales promelas	EPA-821-R-02-013 1000.0
Cyprinodon variegatus	EPA-821-R-02-014 1004.0
Menidia beryllina	EPA-821-R-02-014 1006.0
Arbacia punctulata	EPA-821-R-02-014 1008.0
Champia parvula	EPA-821-R-02-014 1009.0
Trace Metals:	
Trace Metals	EPA 200.8/SW 6020, EPA 245.7
Hardness	EPA SW846 3rd Ed. 6010
Wet Chemistries:	
Alkalinity	EPA 310.2
Chlorine, Residual	Standard Methods 22nd Edition - Method 4500-Cl D
Total Organic Carbon	Standard Methods 22nd Edition - Method 5310 C
Specific Conductance	Standard Methods 22nd Edition - Method 2510 B
Nitrogen - Ammonia	Standard Methods 22nd Edition - Method 4500-NH_3G
pH	Standard Methods 22nd Edition - Method 4500-H+ B
Solids, Total (TS)	Standard Methods 22nd Edition - Method 2540 B
Solids, Total Dissolved (TDS)	Standard Methods 22nd Edition - Method 2540 C
Solids, Total Suspended (TSS)	Standard Methods 22nd Edition - Method 2540 D
Dissolved Oxygen	Standard Methods 22nd Edition - Method 4500-O G

Please visit our web site at www.envirosystems.com for a copy of our accreditations and state certifications.

TOXICOLOGICAL EVALUATION
OF A POWER PLANT EFFLUENT
BIOMONITORING SUPPORT FOR A NPDES PERMIT:
June 2016

Kendall Green Energy Facility
Cambridge, Massachusetts
NPDES Permit Number MA0004898

Prepared For:

ESS Laboratories
185 Frances Avenue
Cranston, Rhode Island 02910

Prepared By:

EnviroSystems, Incorporated
One Lafayette Road
Hampton, New Hampshire 03842

June 2016
Reference Number: ESS-Kendall27578-16-06

STUDY NUMBER 27578

EXECUTIVE SUMMARY

The following summarizes the results of modified acute and chronic exposure bioassays completed during June 2016 to support the NPDES biomonitoring requirements of the Kendall Green Energy Facility located in Cambridge, Massachusetts. Samples were provided by ESS Laboratories, Cranston, Rhode Island. Acute and chronic exposure toxicity were evaluated using the freshwater species, *Ceriodaphnia dubia* and *Pimephales promelas*.

C. dubia, cultured at ESI, were <24 hours old juveniles released within 8 hours of one another. *P. promelas*, supplied by Aquatic BioSystems, Inc. of Fort Collins, Colorado, were <48 hours old at the start of the assay. Dilution water was receiving water collected from the Charles River upstream of the point of discharge. Samples were received under chain of custody in good order. All sample receipt, test conditions and control endpoints were within protocol specifications, except where otherwise noted.

The results presented in this report relate only to the samples described on the chain(s) of custody and sample receipt log(s), and are intended to be used only by the submitter. Results from the modified acute and chronic exposure assays and their relationship to permit limits are summarized in the following matrix.

Acute Toxicity Evaluation

Species	Exposure	LC-50	A-NOEC	Permit Limit (LC-50)	Effluent Meets Permit Limit	Assay Meets Protocol Limits
Ceriodaphnia dubia [a]	48 Hours	>100%	NC	Report	NA	Yes
Pimephales promelas	48 Hours	>100%	NC	Report	NA	Yes

Chronic Toxicity Evaluation

Species	Exposure	C-NOEC	IC-25	Permit Limit (C-NOEC)	Effluent Meets Permit Limit	Assay Meets Protocol Limits
Ceriodaphnia dubia [a]	7 Days	25% [b]	32.5% [b]	Report	NA	Yes
Pimephales promelas [c, d]	7 Days	100% [e]	>100% [e]	Report	NA	Yes

COMMENTS:

NC = Not Calculated.

[a] Replicates E of the laboratory non-diluent control and B of the 6.25% test concentration were removed from statistical analyses because the daphnids were missing on test day 2.

[b] Statistical analysis of the daphnid survival data demonstrated a non-standard dose response curve with a significant effect observed in only the 100% test concentration, resulting in a calculated C-NOEC of 50%. Computation of the IC-25 for survival resulted in a value of 32.5%. Both controls (laboratory and receiving water) met acceptability criteria and the test variability criterion (MSDp) was met. Based on this evidence, a C-NOEC of 25% best represents the observed data.

[c] Replicate A of the laboratory non-diluent control was inadvertently spilled and only 8 fish were recovered on test day 5; therefore, only 8 organisms were used from the start of the assay in this replicate for the statistical analyses.

[d] One fish was inadvertently killed in replicate C of the receiving water diluent control on test day 4; therefore, only 9 organisms were used from the start of the assay in this replicate for the statistical analyses.

[e] The minnow growth data demonstrated a non-standard dose response curve with a significant effect observed in only the 100% test concentration, resulting in a calculated C-NOEC of 50%. Control responses (laboratory and receiving water) and test variability all met acceptability criteria, although the test variability MSDp was calculated to be in the lower end of the acceptable range for this species at 17.2%, indicating there

was little variability within the data set and a higher likelihood that a significant response would be identified. Computation of the IC-25 for growth resulted in a value of >100%. Based on these findings, the calculated C-NOEC is considered unreliable and a C-NOEC of 100% based on the IC-25 is considered representative of the observed data.

TOXICOLOGICAL EVALUATION
OF A POWER PLANT EFFLUENT
BIOMONITORING SUPPORT FOR A NPDES PERMIT:
June 2016

Kendall Green Energy Facility
Cambridge, Massachusetts
NPDES Permit Number MA0004898

1.0 INTRODUCTION

This report presents the results of toxicity tests completed on a series of composite effluent samples collected from the Kendall Green Energy Facility located in Cambridge, Massachusetts. Samples were provided by ESS Laboratories, Cranston, Rhode Island. Testing was based on programs and protocols developed by the US EPA (2002), with exceptions as noted by US EPA Region I (2011, 2013), and involved conducting modified acute and chronic toxicity tests with the freshwater species, *Ceriodaphnia dubia* and *Pimephales promelas*. Testing was performed at EnviroSystems, Incorporated (ESI), Hampton, New Hampshire in accordance with the provisions of TNI Standards (2009).

Acute toxicity tests involve preparing a series of test concentrations by diluting test samples with control water. Groups of test organisms are exposed to each test concentration and a control for a specified period. The mortality data for each concentration can be used to calculate (by regression) the median lethal concentration or LC-50, defined as the concentration of effluent that kills half of the test organisms. Samples with a high LC-50 value are less likely to cause significant environmental impacts. These data can also be analyzed to determine the no effect level. This Acute No Observed Effect Concentration (A-NOEC) is defined as the highest tested effluent concentration that causes no significant mortality. Chronic toxicity tests measure sublethal effects, exposing test organisms to samples during a sensitive period in the life cycle. Minnow chronic tests measure survival and growth (weight) during the first seven days post hatch, and daphnid chronic tests measure survival and juvenile production. Using Analysis of Variance techniques to evaluate the data, it is possible to determine the lowest tested concentration that had an effect (C-LOEC) and the highest tested concentration where no effect (C-NOEC) was observed.

2.0 MATERIALS AND METHODS

2.1 General Methods

Toxicological and analytical protocols used in this program follow procedures primarily designed to provide standard approaches for the evaluation of toxicological effects of discharges on aquatic organisms (US EPA 2002), and for the analysis of water samples (APHA 2012). See Section 4.0 for a list of references.

2.2 Test Species

C. dubia were maintained in laboratory water at 25±1°C with a photoperiod of 16:8 hours light:dark. Cultures are fed daily with a yeast/trout chow/Cerophyll or alfalfa leaves (YTC) mixture supplemented with *Pseudokirchneriella subcapitata* (algae) (US EPA 2002). Adults on a brood board were isolated 24 hours prior to test start and allowed to reproduce for 8 hours.

When necessary, *P. promelas* were acclimated to approximate test conditions prior to use in the assay. Organisms were transferred to test chambers using an inverted glass pipette, minimizing the amount of water added to test solutions.

2.3 Effluent, Receiving Water and Laboratory Water

Effluent and receiving water collection information is provided in Table 1. Samples were received at 0-6°C as per 40 CFR §136.3 unless otherwise noted, stored at 4±2°C and warmed to 25±1°C prior to preparing test solutions. Laboratory water was synthetic reconstituted water prepared at ESI according to protocol (US EPA 2002). This water has been used to successfully culture freshwater organisms since 1992.

Total residual chlorine (TRC) was measured by amperometric titration (MDL 0.02 mg/L) in the effluent samples prior to use in the assays. Samples with ≥0.02 mg/L TRC were dechlorinated using sodium thiosulfate (US EPA 2002).

2.4 Chronic Exposure Bioassays

The chronic exposure bioassays were conducted according to protocol (US EPA 2002), which called for the daily renewal of test solutions. Test treatments were 100% (undiluted), 50%, 25%, 12.5%, and 6.25% effluent. Dissolved oxygen, pH, temperature, and specific conductivity were measured in one replicate of each new test solution.

Test chambers for the daphnid assay were 30 mL portion cups containing approximately 20 mL of test solution in each of 10 replicates with 1 organism/replicate. Replicates were not randomized during testing; rather, organisms were added at test initiation by blocking by known parentage. Survival and juvenile production were monitored daily. Daphnids were each fed 200 µL of YTC supplemented with algae after daily renewals.

Test chambers for the fathead minnow assay were 400-600 mL beakers with 250 mL of solution in each of 4 replicates containing 10 organisms/replicate. Replicates were not randomized during testing; rather, organisms were added randomly at test initiation by replicate across test solutions in an alternating fashion (alternating allocation). Prior to daily renewals, survival and dissolved oxygen were measured in all replicates, and pH, temperature and specific conductivity were measured in one replicate of each concentration. Fish were fed newly hatched *Artemia* nauplii daily. Dead nauplii from previous feedings were removed during daily renewals. On Day 7 of the assay, surviving fish were tranquilized using Finquel® tricaine methane sulfonate and rinsed in deionized water, then placed on tared weighing pans and dried overnight at 104±5°C to obtain dry weight to 0.01 mg. To calculate the final dry biomass/fish, the net dry weight was divided by the number of organisms introduced at the start of the assay.

2.5 Data Analysis

Statistical analysis of acute and chronic exposure data was completed using CETIS™ v 1.9.2.4, Comprehensive Environmental Toxicity Information System, software. The program computes acute and chronic exposure endpoints based on US EPA decision tree guidelines specified in individual test methods. If survival in the highest test concentration is >50%, the LC-50 is obtained by direct observation of the raw data. As needed, the A-NOEC is determined as the highest test concentration that caused no significant mortality. For chronic exposure endpoints statistical significance was accepted at $\propto$ = 0.05. For statistical calculations of *C. dubia* juvenile production, data from only the first three broods are used.

2.6 Quality Control

As part of the laboratory quality control program, reference toxicant evaluations are completed on a regular basis for each test species. These results, summarized in Table 2, provide regular laboratory performance evaluation through the comparison of historic data sets.

3.0 RESULTS AND DISCUSSION

Results of the chronic and modified acute exposure assays completed using *C. dubia* and *P. promelas* are presented in Tables 3 and 4, respectively. Water quality data collected during the assays are summarized in Table 5. US EPA Region I Attachment F toxicity test summary sheets are included after the tables. Support data, including copies of laboratory bench sheets, are provided in Appendix A.

3.1 Chronic Exposure Bioassay - *Ceriodaphnia dubia*

Minimum test acceptability criteria require 80% control survival, mean reproduction of 15 juveniles/female, production of 3 broods by at least 60% of control females, and the MSDp for reproduction to be <47% (US EPA 2002). Achievement of these results indicates that healthy test organisms were used and that the dilution water had no significant adverse impact on the outcome of the assay. See the Executive Summary and Table 3 for test acceptability.

3.2 Chronic Exposure Bioassay - *Pimephales promelas*

Minimum test acceptability criteria require 80% control survival, a mean dry weight of 0.25 mg/fish based on Day 7 survival, and the MSDp for biomass to be <30% (US EPA 2002). Achievement of these results indicates that healthy test organisms were used and that the dilution water had no significant adverse impact on the outcome of the assay. See the Executive Summary and Table 4 for test acceptability.

4.0 LITERATURE CITED

40 CFR §136.3. *Code of Federal Regulations* (CFR), Protection of the Environment (Title 40), Guidelines Establishing Test Procedures for the Analysis of Pollutants (Part 136), Identification of Test Procedures (sub-part 3), Table II-Required Containers, Preservation Techniques, and Holding Times.

APHA. 2012. *Standard Methods for the Examination of Water and Wastewater*, 22nd Edition. Washington D.C.

The NELAC Institute (TNI). 2009. *Environmental Laboratory Sector, Volume 1: Management and Technical Requirements for Laboratories Performing Environmental Analysis (TNI Standard)*. EL-V1-2009.

US EPA. 2000. *Method Guidance and Recommendations for Whole Effluent Toxicity (WET) Testing (40 CFR Part 136)*. EPA 821-B-00-004

US EPA. 2002. *Methods for Measuring the Acute Toxicity of Effluents to Freshwater and Marine Organisms*. Fifth Edition. EPA-821-R-02-012.

US EPA. 2002. *Short Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms*. Fourth Edition. EPA-821-R-02-013.

US EPA Region I. 2011. *US EPA Region 1 Freshwater Acute Toxicity Test Procedure and Protocol*. US EPA Region I Office, Boston, Massachusetts. February 28, 2011.

US EPA Region I. 2013. *Freshwater Chronic Toxicity Test Procedure and Protocol - US EPA Region I*. US EPA Region I Office, Boston, Massachusetts. March 2013.

TABLE 1. Summary of Sample Collection Information.
Kendall Green Energy Biomonitoring Evaluation. June 2016.

Sample Description	Type	Collection Date	Collection Time	Receipt Date	Receipt Time	Arrival Temp °C
EFFLUENT - Outfall 001						
Start	Comp	06/06-07/16	1200-1200	06/07/16	1310	2
First Renewal	Comp	06/07-08/16	1200-1200	06/08/16	1415	2
Second Renewal	Comp	06/09-10/16	0700-0700	06/10/16	1240	3
RECEIVING WATER - Charles River						
Start	Grab	06/06/16	1130	06/07/16	1310	2
First Renewal	Grab	06/08/16	1245	06/08/16	1415	2
Second Renewal	Grab	06/10/16	1100	06/10/16	1240	3

TABLE 2. Summary of Reference Toxicant Data.
Kendall Green Energy Biomonitoring Evaluation. June 2016.

Date	Endpoint		Value	Historic Mean/ Central Tendency	Acceptable Range	Reference Toxicant
C. dubia						
05/18/16	Survival	LC-50	40.7	21.8	2.4 - 41.22	SDS (mg/L)
05/18/16	Survival	C-NOEC	30.0	30.0	15.0 - 60.0	Copper (µg/L)
05/18/16	Reproduction	C-NOEC	30.0	15.0	7.5 - 30.0	Copper (µg/L)
05/18/16	Reproduction	MSDp	15.1	31.6	12.6 - 50.7	Copper (µg/L)
P. promelas						
05/18/16	Survival	LC-50	36.2	32.2	23.0 - 41.3	SDS (mg/L)
06/02/16	Survival	C-NOEC	20.0	20.0	10.0 - 30.0	SDS (mg/L)
06/02/16	Growth	C-NOEC	20.0	10.0	5.0 - 20.0	SDS (mg/L)
06/02/16	Growth	MSDp	32.9	29.3	1.2 - 57.3	SDS (mg/L)

Means and Acceptable Ranges based on the most recent 20 reference toxicant assays

TABLE 3. Summary of Chronic and Modified Acute Results: *C. dubia*. **Kendall Green Energy Biomonitoring Evaluation. June 2016.**

Effluent Conc.	Mean Percent Survival		Mean Reproduction	% Females Producing 3 Broods	Is There a Significant Difference Based on	
	Day 2	Day 7	(Juv/Female)		Survival (%)	Reproduction
LAB [a]	100.0%	100.0%	30.7	70.0%	-	-
RW	100.0%	100.0%	24.3	80.0%	-	-
6.25% [a]	88.9%	88.9%	20.9	44.4%	No	No
12.5%	100.0%	100.0%	25.0	80.0%	No	No
25.0%	90.0%	90.0%	20.9	70.0%	No	No
50.0%	100.0%	50.0%	9.4	30.0%	No	Yes
100.0%	100.0%	0.0%	0.0	0.0%	Yes [b]	-
	LC-50 = >100%		MSDp = 35.0%		NOEC = 25% [b]	NOEC = 25%
					IC-25 = 32.5% [b]	IC-25 = 29.4%

COMMENTS:

RW = Receiving Water; used as the diluent.

[a] Replicates E of the laboratory non-diluent control and B of the 6.25% test concentration were removed from statistical analyses because the daphnids were missing on test day 2.

[b] The daphnid survival data demonstrated a non-standard dose response curve with a significant effect observed in only the 100% test concentration, resulting in a calculated C-NOEC of 50%. Computation of the IC-25 for survival resulted in a value of 32.5%. Both controls (laboratory and receiving water) met acceptability criteria and the test variability criterion (MSDp) was met. Based on this evidence, a C-NOEC of 25% best represents the observed data.

TABLE 4. Summary of Chronic and Modified Acute Results: *P. promelas*. **Kendall Green Energy Biomonitoring Evaluation. June 2016.**

Effluent Conc.	Mean Percent Survival		Mean Biomass	Is There a Significant Difference Based on	
	Day 2	Day 7	(mg/fish)	Survival (%)	Growth (Biomass)
LAB [a]	100.0%	91.2%	0.617	-	-
RW [b]	100.0%	90.0%	0.645	-	-
6.25%	100.0%	77.5%	0.575	No	No
12.5%	100.0%	97.5%	0.670	No	No
25.0%	100.0%	87.5%	0.592	No	No
50.0%	100.0%	87.5%	0.632	No	No
100.0%	97.5%	80.0%	0.519	No	Yes [c]
	LC-50 = >100%		MSDp = 17.2% [c]	NOEC = 100%	NOEC = 100% [c] IC-25 = >100% [c]

COMMENTS:
RW = Receiving Water; used as the diluent.
[a] Replicate A of the laboratory non-diluent control was inadvertently spilled and only 8 fish were recovered on test day 5; therefore, only 8 organisms were used from the start of the assay in this replicate for the statistical analyses.
[b] One fish was inadvertently killed in replicate C of the receiving water diluent control on test day 4; therefore, only 9 organisms were used from the start of the assay in this replicate for the statistical analyses.
[c] The minnow growth data demonstrated a non-standard dose response curve with a significant effect observed in only the 100% test concentration, resulting in a calculated C-NOEC of 50%. Control responses (laboratory and receiving water) and test variability all met acceptability criteria, although the test variability MSDp was calculated to be in the lower end of the acceptable range for this species at 17.2%, indicating there was little variability within the data set and a higher likelihood that a significant response would be identified. Computation of the IC-25 for growth resulted in a value of >100%. Based on these findings, the calculated C-NOEC is considered unreliable and a C-NOEC of 100% based on the IC-25 is considered representative of the observed data.

TABLE 5. Initial Water Quality and Analytical Data Summary. Kendall Green Energy Biomonitoring Evaluation. June 2016.

PARAMETER	UNITS	EFFLUENT	RECEIVING WATER
Specific Conductance	µS/cm	1272	1153
pH	SU	7.35	7.12
Total Residual Chlorine	mg/L	<0.02	-

COMMENTS:
Additional water quality data are provided in Appendix A.

TOXICITY TEST SUMMARY SHEET

FACILITY NAME: Kendall Green Energy Facility
NPDES PERMIT NO.: MA0004898
TEST START DATE: 06/07/16
TEST END DATE: 06/14/16

TEST TYPE	TEST SPECIES	SAMPLE TYPE	SAMPLE METHOD
___ Acute	___ *Pimephales promelas*	___ Prechlorinated	___ Grab
___ Chronic	X *Ceriodaphnia dubia*	___ Dechlorinated	X Composite
X Modified Chronic (Reporting Acute Values)	___ *Daphnia pulex*	___ Chlorine Spiked in Lab	___ Flow-thru
	___ *Americamysis bahia*	___ Chlorinated on Site	___ Other
___ 24 Hour Screen	___ *Cyprinodon variegatus*	___ Unchlorinated	
	___ *Menidia beryllina*	X No Detectable Chlorine Upon Receipt	
	___ *Arbacia punctulata*		

DILUTION WATER:

X Receiving water collected at a point upstream or away from the discharge, free from toxicity or other sources of contamination; Receiving Water Name: Charles River

___ Alternate surface water of known quality and hardness, to generally reflect the characteristics of the receiving water; Receiving Water Name:

___ Synthetic water prepared using either Millipore Milli-Q or equivalent deionized water and reagent grade chemicals; or deionized water combined with mineral water.

___ Artificial sea salts mixed with deionized water

___ Deionized water and hypersaline brine

___ Other

EFFLUENT SAMPLING DATES: 06/06-07/16 06/07-08/16 06/09-10/16

EFFLUENT CONCENTRATIONS TESTED (%): 6.25%, 12.5%, 25%, 50%, 100%

Permit Limit Concentration: Report %

Was the effluent salinity adjusted? No If yes, to what level? _____ ppt

REFERENCE TOXICANT TEST DATE: 05/18/16 LC-50: 40.7 mg/L Sodium Dodecyl Sulfate
05/18/16 NOEC: 30.0 mg/ Copper

PERMIT LIMITS AND TEST RESULTS

Test Acceptability Criteria

Mean Diluent Control Survival: 100 %
Mean # Juveniles / Female: 24.3
MSDp: 35.0 %

LIMITS		**RESULTS**	
LC-50:	- %	LC-50:	>100 %
		Upper Limit:	- %
A-NOEC:	- %	Lower Limit:	- %
		Method:	Direct Observation
C-NOEC:	- %	A-NOEC:	- %
		C-NOEC:	25 %
		C-LOEC:	50 %
		IC- 25	29.4 %

TOXICITY TEST SUMMARY SHEET

FACILITY NAME: Kendall Green Energy Facility TEST START DATE: 06/07/16
NPDES PERMIT NO.: MA0004898 TEST END DATE: 06/14/16

TEST TYPE	TEST SPECIES	SAMPLE TYPE	SAMPLE METHOD
___Acute	X *Pimephales promelas*	___Prechlorinated	___Grab
___Chronic	___*Ceriodaphnia dubia*	___Dechlorinated	X Composite
X Modified Chronic (Reporting Acute Values)	___*Daphnia pulex*	___Chlorine Spiked in Lab	___Flow-thru
	___*Americamysis bahia*	___Chlorinated on Site	___Other
___24 Hour Screen	___*Cyprinodon variegatus*	___Unchlorinated	
	___*Menidia beryllina*	X No Detectable Chlorine Upon Receipt	
	___*Arbacia punctulata*		

DILUTION WATER:

X Receiving water collected at a point upstream or away from the discharge, free from toxicity or other sources of contamination; Receiving Water Name: Charles River

___Alternate surface water of known quality and hardness, to generally reflect the characteristics of the receiving water; Receiving Water Name: _____

___Synthetic water prepared using either Millipore Milli-Q or equivalent deionized water and reagent grade chemicals; or deionized water combined with mineral water.

___Artificial sea salts mixed with deionized water

___Deionized water and hypersaline brine

___Other

EFFLUENT SAMPLING DATES: 06/06-07/16 06/07-08/16 06/09-10/16

EFFLUENT CONCENTRATIONS TESTED (%): 6.25%, 12.5%, 25%, 50%, 100%

Permit Limit Concentration: Report %

Was the effluent salinity adjusted? NO If yes, to what level? _____ppt

REFERENCE TOXICANT TEST DATE: 05/18/16 LC-50: 36.2 mg/L Sodium Dodecyl Sulfate
06/02/16 NOEC: 20.0 mg/L Sodium Dodecyl Sulfate

PERMIT LIMITS AND TEST RESULTS

Test Acceptability Criteria

Mean Diluent Control Survival: 90%

Mean Dry Weight/Fish: 0.716 mg/fish

MSDp: 17.2 %

LIMITS		**RESULTS**	
LC-50:	- %	LC-50:	>100 %
		Upper Limit:	- %
A-NOEC:	- %	Lower Limit:	- %
		Method:	Direct Observation
C-NOEC:	- %	A-NOEC:	- %
		C-NOEC:	100 %
		C-LOEC:	>100 %
		IC- 25	>100 %

APPENDIX A

DATA SHEETS

STATISTICAL SUPPORT

Ceriodaphnia dubia Chronic Reproduction Assay

STUDY# 27578

CLIENT: ESS Laboratories- Kendall Station

SAMPLE: Effluent

DILUENT: RW

Cerio Data source: MSR ☒ MHR ☒

collected: previous pm ☐ test day am ☒

Day 0 06/07/16 Time: 1515 Initial: EH

Day 1 06/08 Time: 1110 Initial: EH

Day 2 06/09/16 Time: 1115 Initial: NP

Day 3 06/10/16 Time: 1340 Initial: HK

Day 4 06/11/16 Time: 1035 Initial: NP

Day 5 06/12/16 Time: 1220 Initial: BP

Day 6 06/13 Time: 1110 Initial: EH

Day 7 06/14 Time: 1430 Initial: DD

Day 8 Time: Initial:

LEGEND:
+ = Live
- = Dead
♂ = Male
M = Missing

Calculations: Initials: LB

Date: 6/16/16

CONC	Day	A	B	C	D	E	F	G	H	I	J	SUM	SURV
MSR	0	+	+	+	+	+	+	+	+	+	+	0	10	
	1	+	+	+	+	+	+	+	+	+	+	0	10	
	2	+	+	+	+	M (E10) NP 6/9	+	+	+	+	+	0	9	
	3	+	+	+	+	|	+	+	+	+	+	0	9	
	4	4	6	7	+	|	5	6	+	7	5	40	9	
	5	+	+	+	+	|	+	+	12	+	+	12	9	70%
	6	9	18	12	10	|	8	12	+	10	13	92	9	
	7	12♂	16♂	19♂	16	|	12♂	12♂	15♂	17♂	13♂	132	9	
	8					↓								
	Total	25	40	38	26		25	30	27	34	31	276	9	
RW	0	+	+	+	+	+	+	+	+	+	+	0	10	
	1	+	+	+	+	+	+	+	+	+	+	0	10	
	2	+	+	+	+	+	+	+	+	+	+	0	10	
	3	+	+	+	+	+	+	+	+	+	+	0	10	
	4	5♂	4	4	5	+	3	+	+	4	+	25	10	80%
	5	6	5	4	5	3	7	+	7	4	3	22	10	
	6	10	11	13	13	4	14	11	8	9	6	99	10	
	7	+♂	16♂	17♂	19♂	4	9♂	12♂	15♂	7♂	17	97	10	
	8													
	Total	21	36	34	23	11	26	23	23	20	26	243	10	
6.25%	0	+	+	+	+	+	+	+	+	+	+	0	10	
	1	+	+	—	+	+	+	+	+	+	+	0	9 ~~10~~	(E10) NP 6/9
	2	+	M (E10) NP 6/9	|	+	+	+	+	+	+	+	0	8	
	3	+	|	|	+	+	+	+	+	+	+	0	8	
	4	3	|	|	5	4	+	+	+	3	+	15	8	
	5	3	|	|	4	+	+	+	6	+	+	13	8	44.4%
	6	8	|	|	17	9	5	10	+	10	15	74	8	
	7	17	|	|	19	13	10	11	15	15	5	86	8	
	8		↓	↓										
	Total	31		0	26	26	15	21	21	28	20	188	8	
12.5%	0	+	+	+	+	+	+	+	+	+	+	0	10	
	1	+	+	+	+	+	+	+	+	+	+	0	10	
	2	+	+	+	+	+	+	+	+	+	+	0	10	
	3	+	+	+	+	+	+	+	+	+	+	0	10	
	4	+	4	5	6	+	4	+	7	5	4	35	10	80%
	5	+	+	+	8	+	+	4	5	2	3	20	10	
	6	9	5	12	12	5	10	3	4	11	10	81	10	
	7	15	16	15	14	8	16	4	16	13	14	114	10	
	8													
	Total	24	25	32	26	13	30	11	30	31	28	250	10	

(E10) NP 6/9 No org. in cup.

Ceriodaphnia dubia Chronic Reproduction Assay

STUDY# 27578

CLIENT: ESS Laboratories- Kendall Station

SAMPLE: Effluent

DILUENT: RW

Cerio Data source: MSR ☒ MHR ☒

collected: previous pm ☐ test day am ☒

Day 0 06/07/16 Time: 1515 Initial: EH

Day 1 06/08 Time: 1110 Initial: EH

Day 2 06/09 Time: 1115 Initial: NP

Day 3 06/10/16 Time: 1340 Initial: HK

Day 4 06/11/16 Time: 1035 Initial: NP

Day 5 06/12/16 Time: 1220 Initial: BP

Day 6 06/13 Time: 1110 Initial: EH

Day 7 6/14 Time: 1430 Initial: DD

Day 8 Time: Initial:

LEGEND:
+ = Live
- = Dead
♂ = Male
M = Missing

Calculations: Initials: LB Date: 6/16/16

CONC	Day	A	B	C	D	E	F	G	H	I	J	SUM	SURV
25%	0	+	+	+	+	+	+	+	+	+	+	0	10
	1	+	+	+	+	+	+	+	+	+	+	0	10
	2	+	+	+	+	+	+	+	+	+	—	0	9
	3	+	+	+	+	+	+	+	+	+	|	0	9
	4	6	5	5	4	5	6	4	+	+	|	35	9
	5	2	1	+	+	+	+	(6)	8	+	|	16	9
	6	+	4	3	3	7	10	(8)	+	8	|	43	9
	7	5	11	14	13	9	14	17	14	18	|	115	9
	8										↓		
	Total	13	20	22	20	21	30	35	22	26	0	209	9
50%	0	+	+	+	+	+	+	+	+	+	+	0	10
	1	+	+	+	+	+	+	+	+	+	+	0	10
	2	+	+	+	+	+	+	+	+	+	+	0	10
	3	+	+	+	+	+	+	+	+	+	+	0	10
	4	4	3	5	3	+	+	+	6	7	6	34	10
	5	6	—	+	+	—	+	+	3	+	+	9	7
	6	|	|	5	9	|	3	+	+	—	—	17	5
	7	|	|	9	11	|	9	+	5	|	|	34	5
	8	↓	↓			↓				↓	↓		
	Total	10	3	19	23	0	12	0	14	7	6	94	5
100%	0	+	+	+	+	+	+	+	+	+	+	0	10
	1	+	+	+	+	+	+	+	+	+	+	0	10
	2	+	—	+	+	—	+	+	+	+	—	0	7
	3	+	|	+	+	|	+	+	+	+	|	0	7
	4	-+♂	|	—	—	|	—	—	—	—	|	0	0
	5	|	|	|	|	|	|	|	|	|	|		
	6	|	|	|	|	|	|	|	|	|	|		
	7	|	|	|	|	|	|	|	|	|	|		
	8	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓		
	Total	0	0	0	0	0	0	0	0	0	0	0	0
	0												
	1												
	2												
	3												
	4												
	5												
	6												
	7												
	8												
	Total												

70%

30%

0%

Ceriodaphnia 7-d Survival and Reproduction Test — **EnviroSystems, Inc.**

Batch ID:	14-7292-9042	**Test Type:**	Reproduction-Survival (7d)	**Analyst:**	Lisa Bordonaro
Start Date:	07 Jun-16 15:15	**Protocol:**	EPA/821/R-02-013 (2002)	**Diluent:**	Receiving Water
Ending Date:	14 Jun-16 14:30	**Species:**	Ceriodaphnia dubia	**Brine:**	Not Applicable
Duration:	6d 23h	**Source:**	In-House Culture	**Age:**	<24h

Sample ID:	12-7462-8134	**Code:**	27578	**Client:**	ESS Laboratory
Sample Date:	07 Jun-16 12:00	**Material:**	Treated Ground Water	**Project:**	Second Quarter WET Compliance Tes
Receipt Date:	07 Jun-16 13:10	**Source:**	Kendall Green Energy Facility		
Sample Age:	3h (2 °C)	**Station:**	MA0004898; Effluent		

Multiple Comparison Summary

Analysis ID	Endpoint	Comparison Method	NOEL	LOEL	TOEL	TU	PMSD	✓
08-6353-0674	7d Proportion Survived	Fisher Exact/Bonferroni-Holm Test	50	100	70.71	2	n/a	
00-9659-3401	Reproduction	Bonferroni Adj t Test	25	50	35.36	4	35.0%	✓

Point Estimate Summary

Analysis ID	Endpoint	Point Estimate Method	Level	%	95% LCL	95% UCL	TU	✓
04-5679-4858	7d Proportion Survived	Linear Interpolation (ICPIN)	EC25	32.5	21.7	52.2	3.079	
19-0396-1803	Reproduction	Linear Interpolation (ICPIN)	IC25	29.4	15.2	36	3.4	✓

Test Acceptability

				TAC Limits			
Analysis ID	**Endpoint**	**Attribute**	**Test Stat**	**Lower**	**Upper**	**Overlap**	**Decision**
04-5679-4858	7d Proportion Survived	Control Resp	1	0.8	>>	Yes	Passes Criteria
08-6353-0674	7d Proportion Survived	Control Resp	1	0.8	>>	Yes	Passes Criteria
00-9659-3401	Reproduction	Control Resp	24.3	15	>>	Yes	Passes Criteria
19-0396-1803	Reproduction	Control Resp	24.3	15	>>	Yes	Passes Criteria
00-9659-3401	Reproduction	PMSD	0.35	0.13	0.47	Yes	Passes Criteria

7d Proportion Survived Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	MS	9	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.00%	0.00%
0	RW	10	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.00%	0.00%
6.25		9	0.889	0.633	1.000	0.000	1.000	0.111	0.333	37.50%	11.11%
12.5		10	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.00%	0.00%
25		10	0.900	0.674	1.000	0.000	1.000	0.100	0.316	35.14%	10.00%
50		10	0.500	0.123	0.877	0.000	1.000	0.167	0.527	105.41%	50.00%
100		10	0.000	0.000	0.000	0.000	0.000	0.000	0.000		100.00%

Reproduction Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	MS	9	30.7	26.4	35	25	40	1.87	5.61	18.30%	0.00%
0	RW	10	24.3	19.3	29.3	11	36	2.23	7.06	29.04%	20.76%
6.25		9	20.9	13.8	28	0	31	3.07	9.2	44.04%	31.88%
12.5		10	25	19.7	30.3	11	32	2.32	7.35	29.39%	18.48%
25		10	20.9	14.1	27.7	0	35	3	9.49	45.42%	31.85%
50		10	9.4	3.86	14.9	0	23	2.45	7.75	82.43%	69.35%
100		10	0	0	0	0	0	0	0		100.00%

Ceriodaphnia 7-d Survival and Reproduction Test EnviroSystems, Inc.

7d Proportion Survived Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	MS	1.000	1.000	1.000	1.000		1.000	1.000	1.000	1.000	1.000
0	RW	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
6.25		1.000		0.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
12.5		1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
25		1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	0.000
50		0.000	0.000	1.000	1.000	0.000	1.000	1.000	1.000	0.000	0.000
100		0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

Reproduction Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	MS	25	40	38	26		25	30	27	34	31
0	RW	21	36	34	23	11	26	23	23	20	26
6.25		31		0	26	26	15	21	21	28	20
12.5		24	25	32	26	13	30	11	30	31	28
25		13	20	22	20	21	30	35	22	26	0
50		10	3	19	23	0	12	0	14	7	6
100		0	0	0	0	0	0	0	0	0	0

Ceriodaphnia 7-d Survival and Reproduction Test — **EnviroSystems, Inc.**

Analysis ID:	08-6353-0674	**Endpoint:**	7d Proportion Survived	**CETIS Version:**	CETISv1.9.2
Analyzed:	23 Jun-16 10:10	**Analysis:**	STP 2xK Contingency Tables	**Official Results:**	Yes
Sample ID:	12-7462-8134	**Code:**	27578	**Client:**	ESS Laboratory
Sample Date:	07 Jun-16 12:00	**Material:**	Treated Ground Water	**Project:**	Second Quarter WET Compliance Tes
Receipt Date:	07 Jun-16 13:10	**Source:**	Kendall Green Energy Facility		
Sample Age:	3h (2 °C)	**Station:**	MA0004898; Effluent		

Data Transform	Alt Hyp	NOEL	LOEL	TOEL	TU
Untransformed	C > T	50	100	70.71	2

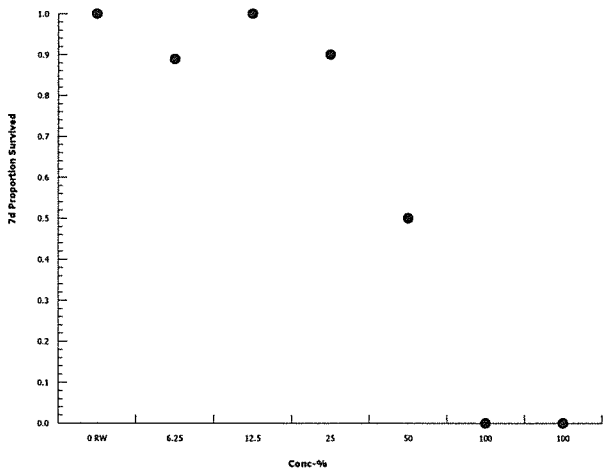
Fisher Exact/Bonferroni-Holm Test

Control	vs	Group	Test Stat	P-Type	P-Value	Decision(α:5%)
Receiving Water		6.25	0.474	Exact	1.0000	Non-Significant Effect
		12.5	1.000	Exact	1.0000	Non-Significant Effect
		25	0.500	Exact	1.0000	Non-Significant Effect
		50	0.016	Exact	0.0650	Non-Significant Effect
		100*	0.000	Exact	2.7E-05	Significant Effect

Data Summary

Conc-%	Code	NR	R	NR + R	Prop NR	Prop R	%Effect
0	RW	10	0	10	1	0	0.0%
6.25		8	1	9	0.889	0.111	11.1%
12.5		10	0	10	1	0	0.0%
25		9	1	10	0.9	0.1	10.0%
50		5	5	10	0.5	0.5	50.0%
100		0	10	10	0	1	100.0%

Graphics



Ceriodaphnia 7-d Survival and Reproduction Test — **EnviroSystems, Inc.**

Analysis ID:	19-0396-1803	**Endpoint:**	Reproduction	**CETIS Version:**	CETISv1.9.2
Analyzed:	23 Jun-16 10:10	**Analysis:**	Linear Interpolation (ICPIN)	**Official Results:**	Yes
Sample ID:	12-7462-8134	**Code:**	27578	**Client:**	ESS Laboratory
Sample Date:	07 Jun-16 12:00	**Material:**	Treated Ground Water	**Project:**	Second Quarter WET Compliance Tes
Receipt Date:	07 Jun-16 13:10	**Source:**	Kendall Green Energy Facility		
Sample Age:	3h (2 °C)	**Station:**	MA0004898; Effluent		

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Log(X+1)	Linear	685249	200	Yes	Two-Point Interpolation

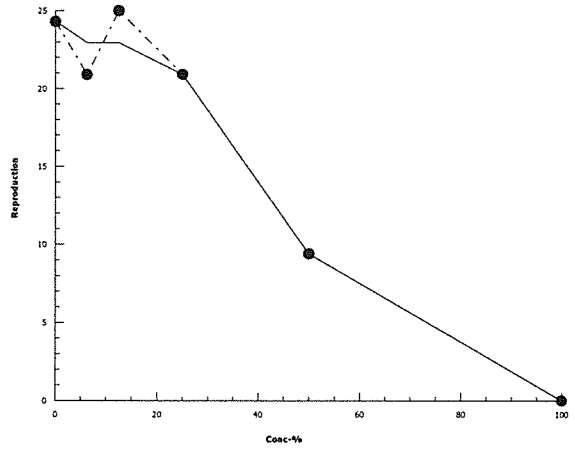
Point Estimates

Level	%	95% LCL	95% UCL	TU	95% LCL	95% UCL
IC25	29.4	15.2	36	3.4	2.775	6.577

Reproduction Summary

			Calculated Variate						
Conc-%	Code	Count	Mean	Min	Max	Std Err	Std Dev	CV%	%Effect
0	RW	10	24.3	11	36	2.23	7.06	29.00%	0.0%
6.25		9	20.9	0	31	3.07	9.2	44.00%	14.0%
12.5		10	25	11	32	2.32	7.35	29.40%	-2.88%
25		10	20.9	0	35	3	9.49	45.40%	14.0%
50		10	9.4	0	23	2.45	7.75	82.40%	61.3%
100		10	0	0	0	0	0		100.0%

Graphics



CETIS Analytical Report

Ceriodaphnia 7-d Survival and Reproduction Test — **EnviroSystems, Inc.**

Analysis ID:	00-9659-3401	**Endpoint:**	Reproduction	**CETIS Version:**	CETISv1.9.2
Analyzed:	23 Jun-16 10:10	**Analysis:**	Parametric-Multiple Comparison	**Official Results:**	Yes
Sample ID:	12-7462-8134	**Code:**	27578	**Client:**	ESS Laboratory
Sample Date:	07 Jun-16 12:00	**Material:**	Treated Ground Water	**Project:**	Second Quarter WET Compliance Tes
Receipt Date:	07 Jun-16 13:10	**Source:**	Kendall Green Energy Facility		
Sample Age:	3h (2 °C)	**Station:**	MA0004898; Effluent		

Data Transform	Alt Hyp	NOEL	LOEL	TOEL	TU	PMSD
Untransformed	C > T	25	50	35.36	4	35.04%

Bonferroni Adj t Test

Control	vs	Conc-%	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)
Receiving Water		6.25	0.905	2.32	8.75	17	CDF	0.7410	Non-Significant Effect
		12.5	-0.191	2.32	8.52	18	CDF	1.0000	Non-Significant Effect
		25	0.927	2.32	8.52	18	CDF	0.7184	Non-Significant Effect
		50*	4.06	2.32	8.52	18	CDF	4.0E-04	Significant Effect

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	1573.38	393.346	4	5.84	7.3E-04	Significant Effect
Error	2962.29	67.3247	44			
Total	4535.67		48			

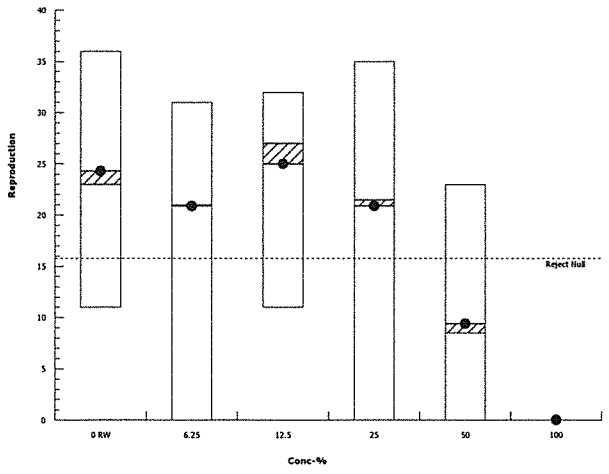
Distributional Tests

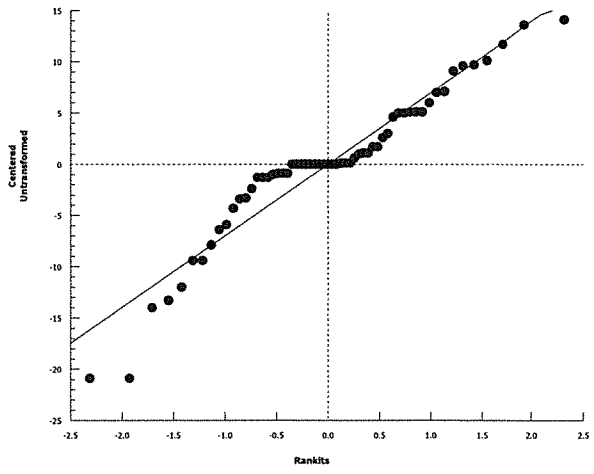
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Bartlett Equality of Variance Test	1.22	13.3	0.8741	Equal Variances
Distribution	Shapiro-Wilk W Normality Test	0.955	0.936	0.0615	Normal Distribution

Reproduction Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	RW	10	24.3	19.3	29.3	23	11	36	2.23	29.04%	0.00%
6.25		9	20.9	13.8	28	21	0	31	3.07	44.04%	14.04%
12.5		10	25	19.7	30.3	27	11	32	2.32	29.39%	-2.88%
25		10	20.9	14.1	27.7	21.5	0	35	3	45.42%	13.99%
50		10	9.4	3.86	14.9	8.5	0	23	2.45	82.43%	61.32%
100		10	0	0	0	0	0	0	0		100.00%

Graphics





Ceriodaphnia 7-d Survival and Reproduction Test — **EnviroSystems, Inc.**

Analysis ID:	04-5679-4858	**Endpoint:**	7d Proportion Survived	**CETIS Version:**	CETISv1.9.2
Analyzed:	23 Jun-16 10:10	**Analysis:**	Linear Interpolation (ICPIN)	**Official Results:**	Yes
Sample ID:	12-7462-8134	**Code:**	27578	**Client:**	ESS Laboratory
Sample Date:	07 Jun-16 12:00	**Material:**	Treated Ground Water	**Project:**	Second Quarter WET Compliance Tes
Receipt Date:	07 Jun-16 13:10	**Source:**	Kendall Green Energy Facility		
Sample Age:	3h (2 °C)	**Station:**	MA0004898; Effluent		

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Log(X+1)	Linear	1480612	200	Yes	Two-Point Interpolation

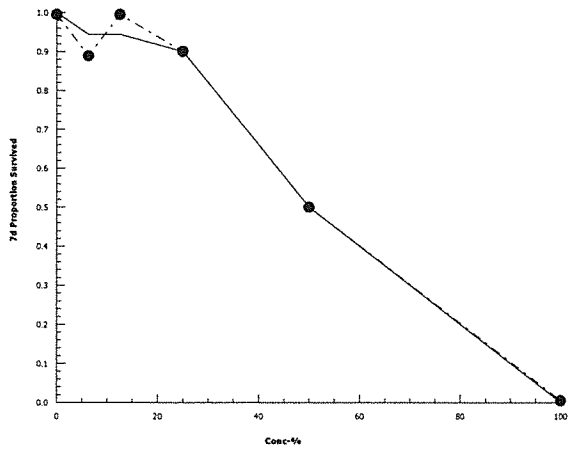
Point Estimates

Level	%	95% LCL	95% UCL	TU	95% LCL	95% UCL
EC25	32.5	21.7	52.2	3.079	1.915	4.6

7d Proportion Survived Summary

			Calculated Variate(A/B)								
Conc-%	**Code**	**Count**	**Mean**	**Min**	**Max**	**Std Err**	**Std Dev**	**CV%**	**%Effect**	**A**	**B**
0	RW	10	1.000	1.000	1.000	0.000	0.000	0.00%	0.0%	10	10
6.25		9	0.889	0.000	1.000	0.111	0.333	37.50%	11.1%	8	9
12.5		10	1.000	1.000	1.000	0.000	0.000	0.00%	0.0%	10	10
25		10	0.900	0.000	1.000	0.100	0.316	35.10%	10.0%	9	10
50		10	0.500	0.000	1.000	0.167	0.527	105.00%	50.0%	5	10
100		10	0.000	0.000	0.000	0.000	0.000		100.0%	0	10

Graphics



Ceriodaphnia dubia - Blocking by Parentage Tracking Sheet

ESI #: 27578

CLIENT: ESS Kendall

START DATE: 06/07/16

START TIME: 1515

INITIAL: EH

COLUMN added to	*C. dubia* ADULT USED board #	cup#
A	MSR 422	1B
B	MSR 423	1F
C	↓	1E
D	↓	2D
E	↓	2A
F	MHR539	1J
G	↓	1H
H	↓	2L
I	↓	1D
J	↓	3C

Pimephales promelas 7 DAY CHRONIC ASSAY

STUDY: 27578	CLIENT: ESS Laboratories	SAMPLE: Effluent - Kendall Station	DILUENT: Receiving Water	FISH/BATCH:

		NUMBER OF SURVIVORS								OLD DISSOLVED OXYGEN (mg/L)						
CON	REP	0	1	2	3	4	5	6	7	1	2	3	4	5	6	7
MSR	A	10	10	10	10	10	10	8	6	7.6	7.7	5.7	6.4	7.2	6.9	4.2
	B	10	10	10	10	10	10	10	10	7.5	7.6	5.7	6.6	7.1	6.8	6.4
	C	10	10	10	10	10	9	9	9	7.4	7.5	6.0	7.3	7.1	6.7	6.7
	D	10	10	10	10	10	10	10	10	7.4	7.4	5.6	7.2	7.2	6.7	6.6
RW	A	10	10	10	10	10	9	9	9	7.3	7.3	5.6	5.6	7.0	6.6	6.4
	B	10	10	10	9	9	9	9	9	7.3	7.0	5.5	5.1	6.7	6.5	6.8
	C	10	10	10	10	9	9	9	9	7.1	6.8	5.7	5.0	6.4	6.6	6.7
	D	10	10	10	10	8	8	8	8	7.1	6.6	6.0	6.0	6.4	6.7	6.9
6.25%	A	10	10	10	9	8	8	8	8	7.0	6.5	6.6	6.0	6.2	6.8	6.7
	B	10	10	10	8	7	6	6	6	7.0	6.4	6.1	5.9	6.2	6.9	6.6
	C	10	10	10	10	9	9	9	9	6.9	6.1	6.5	5.7	6.2	6.8	6.8
	D	10	10	10	8	8	8	8	8	6.9	6.0	6.2	5.9	6.3	6.8	7.1
12.5%	A	10	10	10	10	10	10	10	10	6.9	5.9	5.9	5.9	6.4	6.9	6.9
	B	10	10	10	10	10	10	10	9	6.9	6.0	5.8	5.6	6.1	6.8	6.9
	C	10	10	10	10	10	10	10	10	6.9	6.1	6.1	5.9	5.7	6.6	7.0
	D	10	10	10	10	10	10	10	10	6.9	6.0	5.9	5.6	5.5	6.6	7.1
25%	A	10	10	10	8	8	8	8	8	6.9	6.0	6.0	5.5	5.4	6.4	5.5
	B	10	10	10	10	9	9	9	9	6.8	6.0	5.7	5.4	5.7	6.4	6.2
	C	10	10	10	10	9	9	9	9	6.9	6.0	5.7	5.4	5.9	6.6	6.5
	D	10	10	10	10	10	10	10	9	6.8	6.0	5.9	5.5	5.8	6.5	6.7
50%	A	10	10	10	10	10	9	8	9	6.7	6.2	6.2	6.0	5.9	6.5	6.6
	B	10	10	10	10	10	10	10	10	6.7	6.2	5.6	5.8	6.0	6.6	6.6
	C	10	10	10	10	9	8	8	8	6.7	6.4	5.1	5.4	5.8	6.6	6.6
	D	10	10	10	9	9	9	8	8	6.7	6.4	4.2	4.6	5.6	6.7	7.2
100%	A	10	10	10	10	10	9	9	9	6.7	6.3	5.6	6.1	5.6	6.6	6.7
	B	10	10	10	10	10	10	10	9	6.9	6.3	6.3	6.2	5.9	6.7	6.8
	C	10	10	10	10	10	10	9	6	6.9	6.2	6.3	6.2	6.2	6.8	6.7
	D	10	9	9	9	8	8	8	8	6.8	6.2	6.4	5.9	6.2	6.9	6.7
INC TEMP:		26	26	26	26	26	26	26	26							
DATE:		06/07/16	06/08/16	06/09	06/10	06/11	06/12	06/13	06/14							
TIME:		1550	1000	0905	1125	0905	0940	0855	1015							
INITIALS:		EH	HK	EH	NP	HK	EH	EH	NP							

(10) HK 6/11
Fish killed in transit

(10) EH 06/13 - Beaker spilled, 8 recovered.

STUDY: 27578
CLIENT: Kendall
PROJECT:
ASSAY: PP7DCR
TASK: Dry Weight Data - Balance Output File
BALANCE: Ohaus Discovery Balance Model DV215CD
Serial #: 112402024313

		Date / Init: 06/22/16 DD	06/07/16 CFS		Duplicates	
Sample	Rep	Total Wt (mg)	Tare Wt (mg)		Total Wt (mg)	Tare Wt (mg)
Lab	A	13.76	9.71		13.76	9.67
Lab	B	17.53	10.67			
Lab	C	18.67	12.17			
Lab	D	18.22	11.96			
RW	A	15.99	9.06			
RW	B	16.2	9.79			
RW	C	17.27	11.03			
RW	D	16.49	10.98			
6.25%	A	14.09	8.58		14.09	8.55
6.25%	B	14.09	8.82			
6.25%	C	14.61	8.43			
6.25%	D	16.92	10.88			
12.5%	A	14.09	8.22			
12.5%	B	14.06	7.73			
12.5%	C	16.58	8.91			
12.5%	D	17.46	10.53			
25%	A	15.45	10.22		15.44	10.17
25%	B	14.98	8.61			
25%	C	15.34	9.91			
25%	D	17	10.35			
50%	A	12.87	6.62			
50%	B	16.99	10.13			
50%	C	15.32	8.86			
50%	D	16.78	11.07			
100%	A	14.21	8.25		14.2	8.23
100%	B	13.38	8.94			
100%	C	16.97	12.34			
100%	D	18.35	12.6			

Fathead Minnow 7-d Larval Survival and Growth Test — **EnviroSystems, Inc.**

Batch ID:	14-9509-2673	**Test Type:**	Growth-Survival (7d)	**Analyst:**	Lisa Bordonaro
Start Date:	07 Jun-16 15:50	**Protocol:**	EPA/821/R-02-013 (2002)	**Diluent:**	Receiving Water
Ending Date:	14 Jun-16 10:15	**Species:**	Pimephales promelas	**Brine:**	Not Applicable
Duration:	6d 18h	**Source:**	ARO - Aquatic Research Organisms, NH	**Age:**	<48

Sample ID:	12-7462-8134	**Code:**	27578	**Client:**	ESS Laboratory
Sample Date:	07 Jun-16 12:00	**Material:**	Treated Ground Water	**Project:**	Second Quarter WET Compliance Tes
Receipt Date:	07 Jun-16 13:10	**Source:**	Kendall Green Energy Facility		
Sample Age:	4h (2 °C)	**Station:**	MA0004898; Effluent		

Multiple Comparison Summary

Analysis ID	Endpoint	Comparison Method	NOEL	LOEL	TOEL	TU	PMSD	✓
07-6554-1410	7d Proportion Survived	Dunnett Multiple Comparison Test	100	> 100	n/a	1	18.0%	
15-5936-1280	Mean Dry Biomass-mg	Dunnett Multiple Comparison Test	50	100	70.71	2	17.2%	
11-2541-1922	Mean Dry Weight-mg	Dunnett Multiple Comparison Test	100	> 100	n/a	1	18.5%	

Point Estimate Summary

Analysis ID	Endpoint	Point Estimate Method	Level	%	95% LCL	95% UCL	TU	✓
09-4531-3794	Mean Dry Biomass-mg	Linear Interpolation (ICPIN)	IC25	>100	n/a	n/a	<1	

Test Acceptability

				TAC Limits			
Analysis ID	Endpoint	Attribute	Test Stat	Lower	Upper	Overlap	Decision
07-6554-1410	7d Proportion Survived	Control Resp	0.9	0.799999	>>	Yes	Passes Criteria
09-4531-3794	Mean Dry Biomass-mg	Control Resp	0.645	0.25	>>	Yes	Passes Criteria
15-5936-1280	Mean Dry Biomass-mg	Control Resp	0.645	0.25	>>	Yes	Passes Criteria
11-2541-1922	Mean Dry Weight-mg	Control Resp	0.716	0.25	>>	Yes	Passes Criteria
15-5936-1280	Mean Dry Biomass-mg	PMSD	0.172	0.12	0.3	Yes	Passes Criteria

7d Proportion Survived Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	MS	4	0.912	0.725	1.000	0.750	1.000	0.059	0.118	12.95%	0.00%
0	RW	4	0.900	0.770	1.000	0.800	1.000	0.041	0.082	9.07%	1.37%
6.25		4	0.775	0.575	0.975	0.600	0.900	0.063	0.126	16.24%	15.07%
12.5		4	0.975	0.895	1.000	0.900	1.000	0.025	0.050	5.13%	-6.85%
25		4	0.875	0.795	0.955	0.800	0.900	0.025	0.050	5.71%	4.11%
50		4	0.875	0.723	1.000	0.800	1.000	0.048	0.096	10.94%	4.11%
100		4	0.800	0.575	1.000	0.600	0.900	0.071	0.141	17.68%	12.33%

Mean Dry Biomass-mg Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	MS	4	0.617	0.493	0.741	0.506	0.686	0.0389	0.0779	12.62%	0.00%
0	RW	4	0.645	0.538	0.751	0.551	0.693	0.0335	0.0671	10.40%	-4.46%
6.25		4	0.575	0.506	0.644	0.527	0.618	0.0215	0.0431	7.49%	6.82%
12.5		4	0.67	0.546	0.794	0.587	0.767	0.0389	0.0779	11.62%	-8.58%
25		4	0.592	0.481	0.703	0.523	0.665	0.0348	0.0696	11.75%	4.06%
50		4	0.632	0.556	0.708	0.571	0.686	0.0239	0.0479	7.58%	-2.42%
100		4	0.519	0.397	0.642	0.444	0.596	0.0385	0.0771	14.84%	15.81%

Mean Dry Weight-mg Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Min	Max	Std Err	Std Dev	CV%	%Effect
0	MS	4	0.677	0.614	0.74	0.626	0.722	0.0199	0.0397	5.86%	0.00%
0	RW	4	0.716	0.657	0.776	0.689	0.77	0.0187	0.0374	5.22%	-5.72%
6.25		4	0.752	0.609	0.895	0.687	0.878	0.0449	0.0899	11.95%	-11.06%
12.5		4	0.688	0.569	0.806	0.587	0.767	0.0373	0.0746	10.85%	-1.52%
25		4	0.676	0.581	0.771	0.603	0.739	0.0299	0.0598	8.85%	0.20%
50		4	0.725	0.636	0.814	0.686	0.808	0.028	0.0559	7.71%	-7.10%
100		4	0.661	0.469	0.854	0.493	0.772	0.0603	0.121	18.24%	2.33%

Fathead Minnow 7-d Larval Survival and Growth Test — EnviroSystems, Inc.

7d Proportion Survived Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	MS	0.750	1.000	0.900	1.000
0	RW	0.900	0.900	1.000	0.800
6.25		0.800	0.600	0.900	0.800
12.5		1.000	0.900	1.000	1.000
25		0.800	0.900	0.900	0.900
50		0.900	1.000	0.800	0.800
100		0.900	0.900	0.600	0.800

Mean Dry Biomass-mg Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	MS	0.506	0.686	0.65	0.626
0	RW	0.693	0.641	0.693	0.551
6.25		0.551	0.527	0.618	0.604
12.5		0.587	0.633	0.767	0.693
25		0.523	0.637	0.543	0.665
50		0.625	0.686	0.646	0.571
100		0.596	0.444	0.463	0.575

Mean Dry Weight-mg Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	MS	0.675	0.686	0.722	0.626
0	RW	0.77	0.712	0.693	0.689
6.25		0.689	0.878	0.687	0.755
12.5		0.587	0.703	0.767	0.693
25		0.654	0.708	0.603	0.739
50		0.694	0.686	0.808	0.714
100		0.662	0.493	0.772	0.719

Fathead Minnow 7-d Larval Survival and Growth Test — **EnviroSystems, Inc.**

Analysis ID:	07-6554-1410	**Endpoint:**	7d Proportion Survived	**CETIS Version:**	CETISv1.9.2
Analyzed:	23 Jun-16 10:19	**Analysis:**	Parametric-Control vs Treatments	**Official Results:**	Yes
Sample ID:	12-7462-8134	**Code:**	27578	**Client:**	ESS Laboratory
Sample Date:	07 Jun-16 12:00	**Material:**	Treated Ground Water	**Project:**	Second Quarter WET Compliance Tes
Receipt Date:	07 Jun-16 13:10	**Source:**	Kendall Green Energy Facility		
Sample Age:	4h (2 °C)	**Station:**	MA0004898; Effluent		

Data Transform	Alt Hyp	NOEL	LOEL	TOEL	TU	PMSD
Angular (Corrected)	C > T	100	> 100	n/a	1	18.02%

Dunnett Multiple Comparison Test

Control	vs	Conc-%	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)
Receiving Water		6.25	1.81	2.41	0.219	6	CDF	0.1423	Non-Significant Effect
		12.5	-1.31	2.41	0.219	6	CDF	0.9928	Non-Significant Effect
		25	0.424	2.41	0.219	6	CDF	0.6799	Non-Significant Effect
		50	0.366	2.41	0.219	6	CDF	0.7039	Non-Significant Effect
		100	1.42	2.41	0.219	6	CDF	0.2539	Non-Significant Effect

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0.202044	0.0404087	5	2.44	0.0740	Non-Significant Effect
Error	0.297704	0.0165391	18			
Total	0.499748		23			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Bartlett Equality of Variance Test	2.92	15.1	0.7116	Equal Variances
Distribution	Shapiro-Wilk W Normality Test	0.945	0.884	0.2099	Normal Distribution

7d Proportion Survived Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	RW	4	0.900	0.770	1.000	0.900	0.800	1.000	0.041	9.07%	0.00%
6.25		4	0.775	0.575	0.975	0.800	0.600	0.900	0.063	16.24%	13.89%
12.5		4	0.975	0.895	1.000	1.000	0.900	1.000	0.025	5.13%	-8.33%
25		4	0.875	0.795	0.955	0.900	0.800	0.900	0.025	5.71%	2.78%
50		4	0.875	0.723	1.000	0.850	0.800	1.000	0.048	10.94%	2.78%
100		4	0.800	0.575	1.000	0.850	0.600	0.900	0.071	17.68%	11.11%

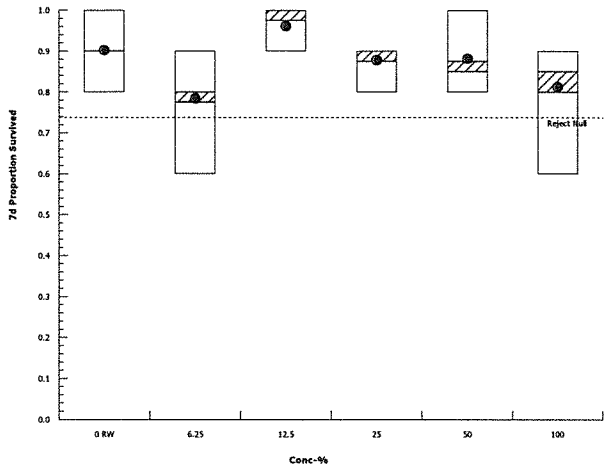
Angular (Corrected) Transformed Summary

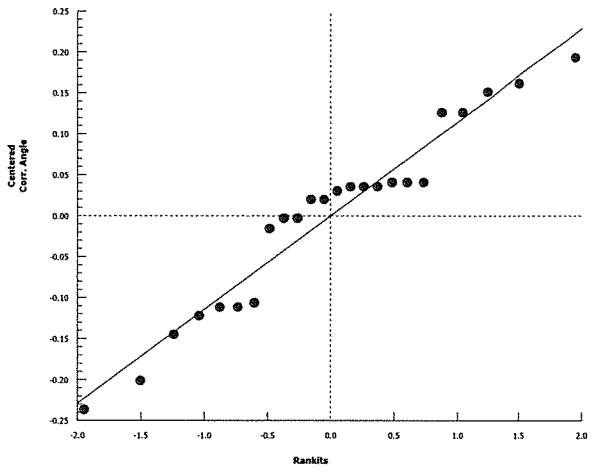
Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	RW	4	1.25	1.06	1.44	1.25	1.11	1.4	0.0605	9.66%	0.00%
6.25		4	1.09	0.849	1.33	1.11	0.886	1.25	0.075	13.79%	13.16%
12.5		4	1.37	1.24	1.5	1.41	1.25	1.41	0.0407	5.94%	-9.51%
25		4	1.21	1.1	1.33	1.25	1.11	1.25	0.0355	5.85%	3.08%
50		4	1.22	0.988	1.45	1.18	1.11	1.41	0.0726	11.91%	2.66%
100		4	1.12	0.85	1.4	1.18	0.886	1.25	0.0857	15.27%	10.33%

Fathead Minnow 7-d Larval Survival and Growth Test — **EnviroSystems, Inc.**

Analysis ID:	07-6554-1410	**Endpoint:**	7d Proportion Survived	**CETIS Version:**	CETISv1.9.2
Analyzed:	23 Jun-16 10:19	**Analysis:**	Parametric-Control vs Treatments	**Official Results:**	Yes

Graphics





Fathead Minnow 7-d Larval Survival and Growth Test — EnviroSystems, Inc.

Analysis ID:	15-5936-1280	**Endpoint:**	Mean Dry Biomass-mg	**CETIS Version:**	CETISv1.9.2
Analyzed:	23 Jun-16 10:19	**Analysis:**	Parametric-Control vs Treatments	**Official Results:**	Yes
Sample ID:	12-7462-8134	**Code:**	27578	**Client:**	ESS Laboratory
Sample Date:	07 Jun-16 12:00	**Material:**	Treated Ground Water	**Project:**	Second Quarter WET Compliance Tes
Receipt Date:	07 Jun-16 13:10	**Source:**	Kendall Green Energy Facility		
Sample Age:	4h (2 °C)	**Station:**	MA0004898; Effluent		

Data Transform	Alt Hyp	NOEL	LOEL	TOEL	TU	PMSD
Untransformed	C > T	50	100	70.71	2	17.21%

Dunnett Multiple Comparison Test

Control	vs	Conc-%	Test Stat	Critical	MSD	DF	P-Type	P-Value	Decision(α:5%)
Receiving Water		6.25	1.51	2.41	0.111	6	CDF	0.2249	Non-Significant Effect
		12.5	-0.551	2.41	0.111	6	CDF	0.9464	Non-Significant Effect
		25	1.14	2.41	0.111	6	CDF	0.3614	Non-Significant Effect
		50	0.273	2.41	0.111	6	CDF	0.7407	Non-Significant Effect
		100*	2.71	2.41	0.111	6	CDF	0.0275	Significant Effect

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0.059594	0.0119188	5	2.81	0.0481	Significant Effect
Error	0.0764804	0.0042489	18			
Total	0.136074		23			

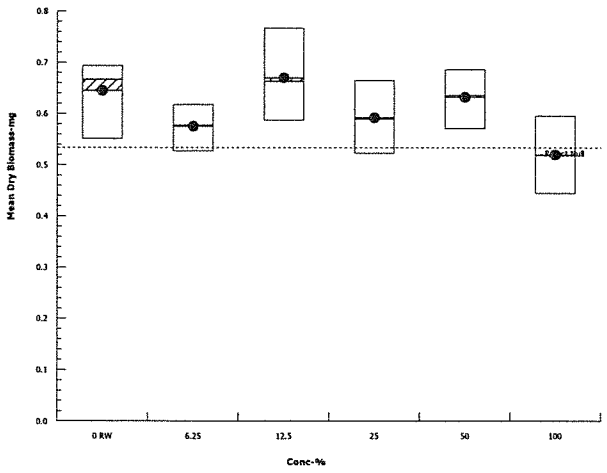
Distributional Tests

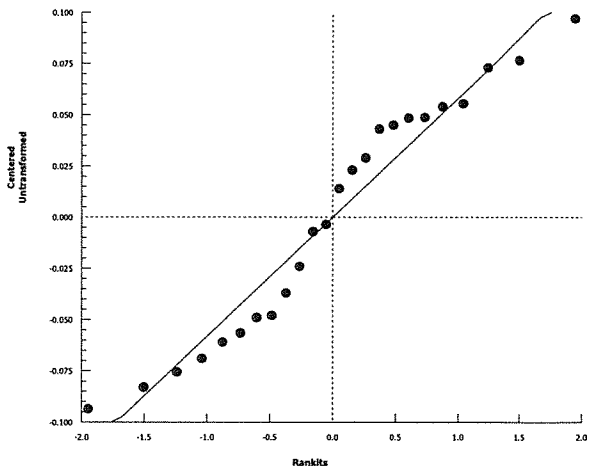
Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Bartlett Equality of Variance Test	1.5	15.1	0.9126	Equal Variances
Distribution	Shapiro-Wilk W Normality Test	0.939	0.884	0.1538	Normal Distribution

Mean Dry Biomass-mg Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	RW	4	0.645	0.538	0.751	0.667	0.551	0.693	0.0335	10.40%	0.00%
6.25		4	0.575	0.506	0.644	0.577	0.527	0.618	0.0215	7.49%	10.80%
12.5		4	0.67	0.546	0.794	0.663	0.587	0.767	0.0389	11.62%	-3.94%
25		4	0.592	0.481	0.703	0.59	0.523	0.665	0.0348	11.75%	8.16%
50		4	0.632	0.556	0.708	0.636	0.571	0.686	0.0239	7.58%	1.95%
100		4	0.519	0.397	0.642	0.519	0.444	0.596	0.0385	14.84%	19.41%

Graphics





Fathead Minnow 7-d Larval Survival and Growth Test — EnviroSystems, Inc.

Analysis ID:	09-4531-3794	**Endpoint:**	Mean Dry Biomass-mg	**CETIS Version:**	CETISv1.9.2
Analyzed:	23 Jun-16 10:19	**Analysis:**	Linear Interpolation (ICPIN)	**Official Results:**	Yes
Sample ID:	12-7462-8134	**Code:**	27578	**Client:**	ESS Laboratory
Sample Date:	07 Jun-16 12:00	**Material:**	Treated Ground Water	**Project:**	Second Quarter WET Compliance Tes
Receipt Date:	07 Jun-16 13:10	**Source:**	Kendall Green Energy Facility		
Sample Age:	4h (2 °C)	**Station:**	MA0004898; Effluent		

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Log(X+1)	Linear	1525288	200	Yes	Two-Point Interpolation

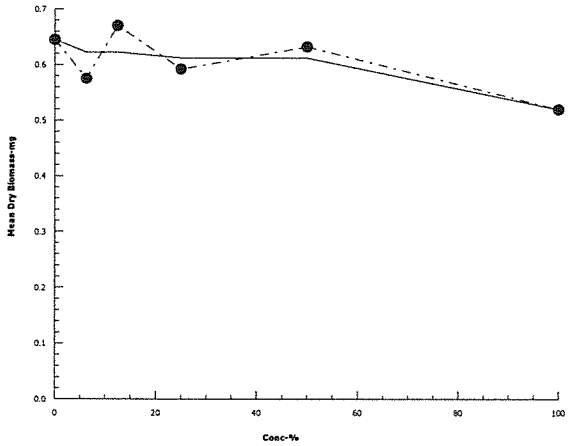
Point Estimates

Level	%	95% LCL	95% UCL	TU	95% LCL	95% UCL
IC25	>100	n/a	n/a	<1	n/a	n/a

Mean Dry Biomass-mg Summary

			Calculated Variate						
Conc-%	Code	Count	Mean	Min	Max	Std Err	Std Dev	CV%	%Effect
0	RW	4	0.645	0.551	0.693	0.0335	0.0671	10.40%	0.0%
6.25		4	0.575	0.527	0.618	0.0215	0.0431	7.49%	10.8%
12.5		4	0.67	0.587	0.767	0.0389	0.0779	11.60%	-3.94%
25		4	0.592	0.523	0.665	0.0348	0.0696	11.80%	8.16%
50		4	0.632	0.571	0.686	0.0239	0.0479	7.58%	1.95%
100		4	0.519	0.444	0.596	0.0385	0.0771	14.80%	19.4%

Graphics



Aquatic Research Organisms

DATA SHEET

OZppAR0606716

I. Organism History

Species Pimephales promelas

Source: Lab reared x Hatchery reared _____ Field collected _____

Hatch date 6/5/16 Receipt date _____

Lot number 06 01 16 FH Strain ARO

Brood origination EPA OH

II. Water Quality

Temperature 24 °C Salinity — ppt D.O. SAT ppm

pH 7.9 su Hardness ≈120 ppm Alkalinity ≈140 ppm

III. Culture Conditions

Freshwater x Saltwater _____ Other _____

Recirculating _____ Flow through _____ Static renewal x

DIET: Flake food _____ Phytoplankton _____ Trout chow _____

Artemia _____ Rotifers x YCT _____ Other Emp Diet

Prophylactic treatments: _____

Comments: _____

_____

IV. Shipping Information

Client: EST # of Organisms 350+

Carrier: Pick-up Date shipped 6/7/16

Biologist: _____

PO BOX 1271 HAMPTON NH 03843-1271 (603) 926-1650 AROFISH@AOL.COM

FRESHWATER CHRONIC ASSAY - *C. dubia and P. promelas* NEW WATER QUALITIES

STUDY: 27578 CLIENT: ESS Laboratories SAMPLE: Effluent - Kendall Station DILUENT: Receiving Water

NEW DISSOLVED OXYGEN (mg/L)

CONC	REP	0	1	2	3	4	5	6	7
MSR	A	8.3	8.6	8.7	8.4	8.6	8.2	8.2	
RW	A	6.8	6.3	8.0	8.1	8.5	8.3	8.3	
6.25%	A	6.7	7.0	8.0	8.1	8.4	8.4	8.5	
12.5%	A	6.8	6.9	7.9	8.2	8.3	8.4	8.6	
25%	A	6.8	7.1	7.9	8.1	8.3	8.4	8.6	
50%	A	7.0	6.8	7.9	8.2	8.2	8.4	8.6	
100%	A	7.1	6.4	8.0	8.1	8.2	8.6	–	

NEW pH (SU)

0	1	2	3	4	5	6	7
7.80	7.79	7.90	7.99	7.95	7.94	7.85	
7.12	7.00	7.44	7.30	7.46	7.44	7.51	
7.14	7.03	7.42	7.33	7.46	7.44	7.48	
7.16	7.03	7.42	7.35	7.47	7.44	7.44	
7.19	7.02	7.43	7.38	7.46	7.45	7.44	
7.22	6.99	7.44	7.41	7.45	7.44	7.43	
7.35	6.87	7.47	7.41	7.40	7.42	–	

NEW SPECIFIC CONDUCTIVITY (µMHOS/CM)

CONC	REP	0	1	2	3	4	5	6	7
MSR	A	199	206	202	190	190	190	185	
RW	A	1153	1189	1164	1243	1401	1350	1352	
6.25%	A	1208	1210	1254	1268	1446	1421	1433	
12.5%	A	1211	1210	1250	1272	1451	1421	1441	
25%	A	1222	1207	1260	1273	1449	1414	1439	
50%	A	1236	1206	1268	1279	1434	1405	1424	
100%	A	1272	1200	1276	1288	1408	1399	–	
INC TEMP		26	26	26	26	26	26	26	
DATE:		06/07/16	06/08/16	06/09	06/10	06/11	06/12	06/13	
TIME:		1435	1045	1050	1300	0955	1010	0925	
INITIALS:		EH	HK	EH	HK	NP	EH	EH	

NEW TEMPERATURE (°C)

0	1	2	3	4	5	6	7
23	22	21	23	23	24	23	
25	22	22	23	25	24	21	
25	22	22	23	24	24	21	
25	22	22	23	24	24	21	
25	22	22	23	24	24	21	
25	22	22	23	24	24	21	
25	22	22	23	24	24	–	

	DAY 0 (START)							DAY 2 (1ST RENEWAL)				DAY 4 (2ND RENEWAL)			
	METALS	TOC	ALK	HARD	AMM	TS/TDS	TRC	ALK	HARD	AMM	TRC	ALK	HARD	AMM	TRC
EFF							<0.02				<0.02				<0.02
RW															

Did 1st Renewal sample cause ≥50% mortality? Yes X No ~~X~~ 7/4/16

If "YES" put into circulation TOC and METALS bottles. N/A

Did 2nd Renewal sample cause ≥50% mortality? Yes X No ____

If "YES" put into circulation TOC and METALS bottles. N/A

C. dubia Old Water Qualities

STUDY: 27578	CLIENT: ESS Laboratories	SAMPLE: Effluent - Kendall Station	DILUENT: RW

CONC	DAY	pH	DO	TEMP	SPEC	CONC	DAY	pH	DO	TEMP	SPEC	INC TEMP	INIT
MSR	1	8.15	8.4	22	234	25%	1	8.05	8.4	23	1302	26	EH
	2	8.41	9.1	21	249		2	8.15	8.7	21	1354	26	DD
	3	8.54	8.7	23	256		3	8.19	8.4	23	1757	26	HK
	4	8.05	8.4	23	230		4	8.08	8.5	23	1462	26	HK
	5	8.34	7.7	23	219		5	8.08	7.3	23	1590	26	DD
	6	8.23	8.0	23	230		6	8.02	8.0	23	1630	26	EH
	7	8.25	8.5	23	253		7	8.04	8.1	23	1690	26	DG
	8						8						
RW	1	8.05	8.3	23	1231	50%	1	8.05	8.3	23	1317		
	2	8.22	8.9	21	1294		2	8.19	8.8	21	1357		
	3	8.37	8.16	23	1529		3	8.21	8.4	23	1855		
	4	8.01	8.4	23	1451		4	8.09	8.5	23	1461		
	5	8.09	7.4	23	1589		5	8.12	7.4	22	1567		
	6	8.03	8.0	23	1483		6	8.06	8.0	23	1328		
	7	8.28	8.6	23	1641		7	8.04	8.3	23	1635		
	8						8						
6.25%	1	8.07	8.5	23	1303	100%	1	8.13	8.3	23	1361		
	2	8.18	8.8	21	1379		2	8.32	8.9	21	1354		
	3	8.28	8.5	23	1628		3	8.21	8.2	23	1943		
	4	8.02	8.3	23	1468		4	8.09	8.4	23	1453		
	5	8.09	7.3	E10 HK 6/14			5						
	6	8.01	8.0	23	1576		6						
	7	8.03	8.1	23	1692		7						
	8						8						
12.5%	1	8.04	8.5	23	1296		1						
	2	8.16	8.7	21	1345		2						
	3	8.23	8.5	23	1702		3						
	4	8.06	8.3	23	1469		4						
	5	8.09	7.3	23	1630		5						
	6	8.01	8.0	23	1596		6						
	7	8.04	8.1	23	1692		7						
	8						8						

E10 All organisms in 100% Dead DO 6/12

E10 HK 6/14
temp and spec. con. overlooked for 6.25% on day 5

E10 HK 6/11 pH probe ~~177~~ 6 HK 6/11 139 used at WQ station 1 on 6/11/16, Day 4 for old water qualities.

P. promelas CHRONIC ASSAY - OLD WATER QUALITIES

STUDY: 27578	CLIENT: ESS Laboratories	SAMPLE: Effluent	DILUENT: RW

OLD Temperature (°C)

CONC	REP	1	2	3	4	5	6	7
MSR	A	24	23	24	23	24	24	24
RW	A	24	24	24	24	24	24	24
6.25%	A	24	24	24	24	24	24	24
12.5%	A	24	24	24	24	24	24	24
25%	A	24	24	24	24	24	24	24
50%	A	24	24	24	24	24	24	24
100%	A	24	24	24	24	24	24	24

OLD pH (SU)

CONC	REP	1	2	3	4	5	6	7
MSR	A	7.46	7.71	7.40	7.52	7.55	7.47	7.24
RW	A	7.48	7.54	7.31	7.33	7.41	7.31	7.4 4 GHK 6/14
6.25%	A	7.51	7.54	7.53	7.40	7.44	7.39	7.57
12.5%	A	7.53	7.51	7.45	7.43	7.37	7.44	7.61
25%	A	7.53	7.46	7.43	7.38	7.40	7.44	7.39
50%	A	7.55	7.55	7.46	7.42	7.47	7.52	7.50
100%	A	7.62	7.55	7.32	7.44	7.48	7.59	7.52

OLD SPECIFIC CONDUCTIVITY (µMHOS/CM)

CONC	REP	1	2	3	4	5	6	7
MSR	A	212	227	228	231	220	214	225
RW	A	1142	1231	1333	1350	1477	1441	1545
6.25%	A	1231	1317	1359	1371	1563	1516	1582
12.5%	A	1288	1343	1442	1420	1575	1512	1652
25%	A	1268	1334	1345	1396	1561	1622	1562
50%	A	1271	1337	1348	1374	1538	1604	1544
100%	A	1337	1360	1345	1441	1511	1583	1491

INC TEMP:		26	26	26	26	26	26	25
DATE:		06/08/14	06/09	06/10	06/11	06/12	06/13	06/14
TIME:		0835	0845	0930	0840	0855	0845	0925
INITIALS:		EH	EH	HK	HK	EH	EH	HK

PREPARATION of DILUTIONS

STUDY: 27578 CLIENT: ESS Laboratories SAMPLE: Effluent - Kendall Station

SPECIES: *C. dubia* & *P. promelas* TEST: chronic renewal DILUENT: Receiving Water

START Diluent: RW Concentration	Day: 0 Sample: E_0, D_0 Vol Eff	Final Vol	Day: 1 Sample: E_0, D_0 Vol Eff	Final Vol
MSR	0	1200	0	1000
RW	0		0	
6.25%	75		62.5	
12.5%	150		125	
25%	300		250	
50%	600		500	
100%	1200		1000	

	Date / Time / Init	*Selenastrum*	YCT	Brine Shrimp
Day 0	06/07/16 1420 EH	A-4274	F121	A-4090
Day 1	06/08/16 1035 HK	A-4274	F121	A-4090
Day 2	06/09/16 0950 EH	A-4274	F121	A-4090
Day 3	06/10/16 1205 NP	A-4274	F121	A-4090
Day 4	06/11/16 0945 HK	A-4274	F121	A-4090
Day 5	06/12 0955 EH	A-4274	F121	A-4090
Day 6	06/13 0910 EH	A-4274	F121	A-4090
Day 7				

1st Renewal Diluent: RW Concentration	Day: 2 Sample: E_1, D_1 Vol Eff	Final Vol	Day: 3 Sample: E_1, D_1 Vol Eff	Final Vol	Day: Sample: Vol Eff	Final Vol
MSR	0	1000	0	1000		
RW	0		0			
6.25%	62.5		62.5			
12.5%	125		125			
25%	250		250			
50%	500		500			
100%	1000		1000			

Lab Water ID:	
Day 0	27555 W-1019
Day 1	27555 W-1019
Day 2	27555 W-1019
Day 3	27601 & 27555 W-1022
Day 4	27601 W-1022
Day 5	27601 W-1022
Day 6	27601 W-1022
Day 7	

2nd Renewal Diluent: RW Concentration	Day: 4 Sample: $E_2 D_2$ Vol Eff	Final Vol	Day: 5 Sample: E_2, D_2 Vol Eff	Final Vol	Day: 6 Sample: $E_2 D_2$ Vol Eff	Final Vol	Day: Sample: Vol Eff	Final Vol
MSR	0	1000	0	1000	0	1000		
RW	0		0		0			
6.25%	62.5		62.5		62.5			
12.5%	125		125		125			
25%	250		250		250			
50%	500		500		500			
100%	1000		1000		1000			

METER USE RECORD
FRESHWATER CHRONIC
C. dubia & P. promelas

STUDY: 27578	CLIENT: ESS Laboratories	SAMPLE: Effluent - Kendall Station

OLD WATER QUALITIES - *P. promelas*

	0	1	2	3	4	5	6	7	8
Water Quality Station #		1	1	1	1	1	1	1	
Initials		EH	EH	HK	HK	EH	EH	HK	

OLD WATER QUALITIES - *C. dubia*

	0	1	2	3	4	5	6	7	8
Water Quality Station #		1	1	1	1	1	1	2	1
Initials		EH	DD	HK	HK	DD	EH	BG	~~EH~~ BG

@EH 06/21

NEW WATER QUALITIES - Both Species

	0	1	2	3	4	5	6	7	8
Water Quality Station #	1	1	1	1	1	1	1		
Initials	EH	HK	EH	HK	NP	EH	EH		
Date	06/07/16	06/08/16	06/09	06/10	6/11	06/012	06/13	06/14	06/15

@EH 06/12

Water Quality Station #1		Water Quality Station #2		COMMENTS
DO meter #	24	DO meter #	23	
DO probe #	EHK 6/8 9X3	DO probe #	94	
pH meter #	1097	pH meter #	470	
pH probe #	140	pH probe #	138	
S/C meter #	YSI 300	S/C meter #	YSI 30	
S/C probe #	↓	S/C probe #	↓	

pH probe #139 for WQ station 1 beginning on day 4 For old water qualities of c. dubia.

SAMPLE RECEIPT RECORD
FOR CHRONIC TOXICITY EVALUATIONS

STUDY #: 27578	CLIENT:

SAMPLE RECEIPT INFORMATION

	Start Sample	First Renewal	Second Renewal
Sample Receipt Date & Time:	06/07/16 1310	06/08/16 1415	06/10/16 1240
Received By:	KC	KC	BG
Delivered Via:	Fed Ex UPS (Client) Courier ESI	Fed Ex UPS (Client) Courier ESI	Fed Ex UPS (Client) Courier ESI
Logged Into Lab By:	HK	NP	NP
Date &Time Logged In:	06/07/16 1400	06/08/16 1435	06/10/16 1320

SAMPLE CONDITION INFORMATION

Chain of Custody?	(Yes) or No	(Yes) or No	(Yes) or No
Chain of Custody Signed?	(Yes) or No	(Yes) or No	(Yes) or No
Chain of Custody Complete?	(Yes) or No	(Yes) or No	(Yes) or No
Sample Date?	(Yes) or No	(Yes) or No	(Yes) or No
Sample Time?	(Yes) or No	(Yes) or No	(Yes) or No
Sample Type?	(Yes) or No	(Yes) or No	(Yes) or No
Custody Seal in Place?	Yes (NA) No	Yes (NA) No	Yes (NA) No
Shipping Container Intact?	(Yes) or No	(Yes) or No	(Yes) or No
Temp Blank Temperature:	2.5°C	2.0°C	2.6°C
DOES CLIENT NEED NOTIFICATION OF TEMP?	Yes or (No)	Yes or (No)	Yes or (No)
Sample Arrived on Ice?	(Yes) or No	(Yes) or No	(Yes) or No
COMMENTS:	See COC	See COC	See COC

P:\GENERAL PROJECTS\FORMS\LABFORMS\Sample Receipt Record - Chronic 2013.wpd

ESI EnviroSystems, Inc.
1 Lafayette Road
Hampton, NH 03842

Voice: 603-926-3345
FAX: 603-926-3521

ESI Job No: 27578

CHAIN OF CUSTODY DOCUMENTATION

Client: ESS Laboratory	Contact: Joe Sirbak	Project Name: ESS Laboratory - Kendall Station	
Report to: Joe Sirbak	Address: 5 Avenue D	Project Number: P0604	Task: 0001
Invoice to: Joe Sirbak	Address: Hopkinton, MA 01748	Project Manager: Joe Sirbak	
Voice: 508-435-9244 x4720	Fax: 508-435-9912	email: Jsirbak@thielsch.com	ERR

Protocol: NPDES

Lab Number (assigned by lab)	Your Field ID: (must agree with container)	Date Sampled	Time Sampled	Sampled By	Grab or com-posite (G/C)	Container No	Container Size (mL)	Container Type (P/G/T)	Field Preser-vation	Matrix S=Solid W=Water	Filter N=Not needed F=Done in field L=Lab to do	Analyses Requested\ Special Instructions:
001	Effluent Start	6/6-6/7/16	12:00-12:00	MNM	C	3	3750	P	4 C	Water	N	CDPP7DCR StartSample
002	Receiving Water Start	6/6/16	11:30	MNM	G	6	3750	P	4 C	Water	N	CDPP7DCR StartDiluent

Relinquished By:	Date: 6/7/16 Time: 13:10	Received By:	Date: 06/07/16 Time: 1310
Relinquished By:	Date: Time:	Received at Lab By:	Date: Time:

Comments: Marine chronic assays will be conducted if effluent PPT is >1 at time of collection.

2.5°C

COC Number: A1013492

Sample Delivery Group No: May 2016

Page of

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ESI Job No: 27578

CHAIN OF CUSTODY DOCUMENTATION

Client: ESS Laboratory	Contact: Joe Sirbak	Project Name: ESS Laboratory - Kendall Station	
Report to: Joe Sirbak	Address: 5 Avenue D	Project Number: P0604	Task: 0001
Invoice to: Joe Sirbak	Address: Hopkinton, MA 01748	Project Manager: Joe Sirbak	
Voice: 508-435-9244 x4720	Fax: 508-435-9912	email: Jsirbak@thielsch.com	ERR

Protocol: NPDES

Lab Number (assigned by lab)	Your Field ID: (must agree with container)	Date Sampled	Time Sampled	Sampled By	Grab or com-posite (G/C)	Container No	Container Size (mL)	Container Type (P/G/T)	Field Preser-vation	Matrix S=Solid W=Water	Filter N=Not needed F=Done in field L=Lab to do	Analyses Requested\ Special Instructions:
003	Effluent First Renewal	6/7-6/8/16	1200-1200	MNM	C	3	3750	P	4 C	Water	N	CDPP7DCR 1stRenewal Sample
004	Receiving Water First Renewal	6/8/16	12:45	MNM	G	5	3750	P	4 C	Water	N	CDPP7DCR 1stRenewal Diluent

Relinquished By:	Date: 6/8/16 Time: 1415	Received By:	Date: 6/8/16 Time: 1415
Relinquished By:	Date: Time:	Received at Lab By:	Date: Time:

Comments: Marine chronic assays will be conducted if effluent PPT is >1 at time of collection.

2.0°C

COC Number: A1013507

Sample Delivery Group No: June 2016

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ESI

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1 Lafayette Road
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FAX: 603-926-3521

ESI Job No: 27578

CHAIN OF CUSTODY DOCUMENTATION

Client: ESS Laboratory	Contact: Joe Sirbak	Project Name: ESS Laboratory - Kendall Station	
Report to: Joe Sirbak	Address: 5 Avenue D	Project Number: P0604	Task: 0001
Invoice to: Joe Sirbak	Address: Hopkinton, MA 01748	Project Manager: Joe Sirbak	
Voice: 508-435-9244 x4720	Fax: 508-435-9912	email: Jsirbak@thielsch.com	ERR

Protocol: NPDES

Lab Number (assigned by lab)	Your Field ID: (must agree with container)	Date Sampled	Time Sampled	Sampled By	Grab or com-posite (G/C)	Container No	Container Size (mL)	Container Type (P/G/T)	Field Preser-vation	Matrix S=Solid W=Water	Filter N=Not needed F=Done in field L=Lab to do	Analyses Requested\ Special Instructions:
005	Effluent Second Renewal	6/9-10/16	0700-0700	MNM	C	4	3750	P	4 C	Water	N	CDPP7DCR 2ndRenewal Sample
006	Receiving Water Second Renewal	6/10/16	1100	MNM	G	6	3750	P	4 C	Water	N	CDPP7DCR 2ndRenewal Diluent

Relinquished By: _____ Date: 6/10/16 Time: 1240 Received By: _____ Date: 6/10/16 Time: 1240

Relinquished By: _____ Date: _____ Time: _____ Received at Lab By: _____ Date: _____ Time: _____

Comments: Marine chronic assays will be conducted if effluent PPT is >1 at time of collection.

2.6°C

COC Number: A1013508

Sample Delivery Group No: June 2016 Page _____ of _____

Assay Review Checklist

DATE IN: 6/6/16
DATE DUE: _____
_____

STUDY#: 27578
CLIENT: ESS
PROJECT: Kendall Station
ASSAY: PP7DCR, CD7DCR

Project Paperwork Check for Completeness			
	Date	**Initials**	**Comments**
Day 0	06/07/16	EH	
Day 1	06/08	EH	
Day 2	06/09	DD	
Day 3	06/10	HK	
Day 4	06/11	HK	
Day 5	6/12	DD	
Day 6	06/13	EH	DD old WQS 60%
Day 7	06/14	NP	
Day 8			

Analyst Data Review	Date	Initials	Comments
Chains of Custody Complete	06/21/16	EH	
Sample Receipt Complete	↓	↓	
Organism Culture Sheet(s)			
Bench Sheets Complete (dates, times, initials, etc...)			
Water Quality Data Complete			
TRC Values & Bottle Numbers			
Daphnid Calculations Complete	↓		
Weights Reported	06/22/16		
Assay Acceptability Review	06/21/16	↓	

Technical Report Review	Date	Initials	Comments
Statistical Analysis Complete	6/23/16	LB	
Statistical Analysis Reviewed	07/08/16	↓	
Data Acceptability Review	7/6/16	LB	
Supporting Chemistry Report	N/A		
Draft Report	7/6-7/16	LB	
QA Audit/Review Complete			
Final Report Reviewed	07/08/16	↓	
Final Report Printed - PDF	↓	↓	
Executive Summary / Chems Sent			
Report E-mailed / Faxed			
Report Logged Out / Invoice Sent			
Report Scanned to Archive	↓	↓	

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